Doctorate in Clinical Psychology

The Relationship Between Adult Attachment, Early Maladaptive Schemas and Alcohol Use in a Student Population

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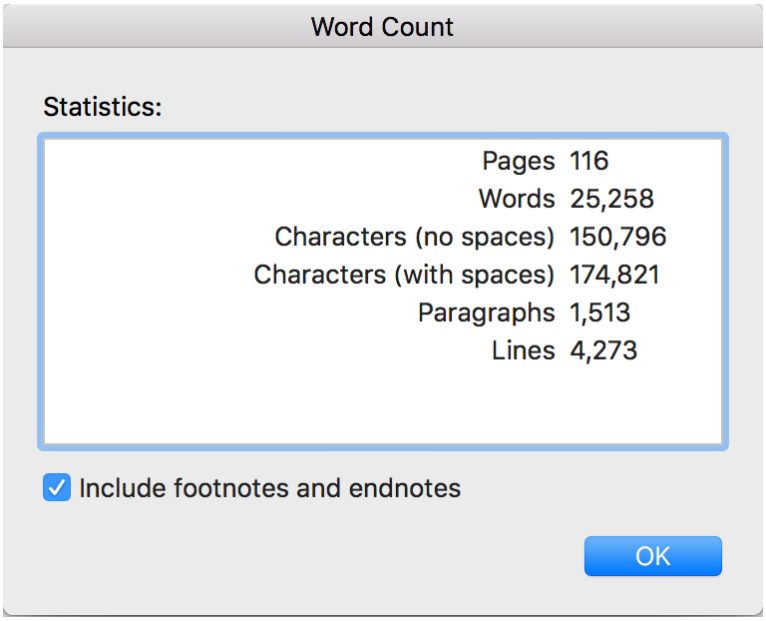

25,258 words
minus references (4,093 words),
plus imported files (3,775 words – mainly questionnaires in the appendices)

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Thesis Overview

Early maladaptive schemas (EMS) are trans-diagnostic cognitive and emotional structures that are formed through unmet needs in early attachment relationships with caregivers and are implicated in psychological distress. The focus of this thesis is the relationship between EMS and substance use. To date, research investigating the relationship between EMS and substance use has been sparse, although there has been recent increased interest in research in this area. This thesis aimed to develop a better understanding of this relationship. To address this, two papers are presented: Chapter 1 provides a systematic literature review, Chapter 2 provides a cross-sectional empirical study.

The literature review identified, collated and reported previous research in the area of EMS and substance use (including alcohol and drug use). A total of 14 studies were found to be relevant after reviewing the inclusion criteria. Studies were included if they were published in English, in peer reviewed journals, used quantitative methodology, used a questionnaire to measure EMS, were conducted with either adult or child populations, in any setting and reported data regarding the relationship between EMS and substance use or compared the EMS of clinical groups of substance users with healthy controls. The review includes a summary of the conceptualisation of EMS, and an overview of the findings from the studies. It was identified that EMS were risk factors for substance use and type of substance abused, (although findings were mixed and some studies were limited by methodological issues such as small sample sizes). Specifically, the EMS domain of impaired limits was most strongly associated with alcohol use. Although EMS theoretically originate from unmet childhood needs and schema therapy draws upon attending to these needs, there has been no study to date investigating the relationship between attachment, EMS and substance use. As a result, recommendations for future research were proposed.

Chapter 2 is an empirical paper that was drawn from recommendations from the systematic review to further evaluate the relationship between EMS and substance use. A model was developed based on previous research findings in this area. Specifically, the role of EMS domains in mediating the relationship between adult romantic attachment (anxiety and avoidance), and alcohol use were investigated. It was hypothesised that EMS would mediate the relationship between adult romantic attachment and alcohol use in a student population. Self-report questionnaires were completed by 128 students at the University of Liverpool. The analysis supported previous findings that the impaired limits EMS domain had an important role in alcohol use. The model was tested using bias-corrected bootstrapping. The results added to existing research in finding that the impaired limits EMS domain mediated the relationship between adult insecure romantic attachment (both attachment anxiety and attachment avoidance), and that impaired limits and drinking to cope with depression and anxiety were serial mediators in the relationship between attachment avoidance and alcohol use, but not for attachment anxiety and alcohol use. This research highlights the relationship between EMS and avoidant coping strategies (attachment avoidance and drinking to cope) on drinking behaviour. It develops our understanding of the relationship between EMS and alcohol use and presents recommendations for future research and clinical practice. As the systematic review will be submitted for publication to Frontiers in Psychology, and the empirical paper will be submitted for publication to the Journal of Abnormal Psychology, these chapters will be written in a style for these journals' requirements (see Appendix A and B respectively).

CHAPTER 1: SYSTEMATIC REVIEW

What is the Relationship Between Early Maladaptive Schemas and Substance Use?

A Systematic Review of the Literature.

Elizabeth Rawlinson

Article prepared for submission to Frontiers in Psychology for peer review. Please see Appendix A for the journal guidelines for authors.

Abstract

Background. Early maladaptive schemas (EMS) are associated with a wide variety of mental health difficulties and problematic behavioural coping strategies. While the associations between EMS and a range of psychopathologies were previously explored in systematic reviews, there has been no review of EMS and substance use. Investigating the relationship between EMS and substance use was the primary aim of this systematic review.

Methods. Four electronic databases (PsychINFO, PubMed, Scopus and Web of Science) were searched from their initiation until September 2017 using the search terms (schema*) AND (substance* OR addict* OR alcohol* OR opiate* OR cocaine OR amphetamine* OR stimulant* OR hallucinogen*). Studies were included if they were published in English, in peer reviewed journals, had quantitative methodology, were conducted with any population or setting and reported data regarding the relationship between EMS and substance use. The review identified 1754 records. After deduplication, 858 articles were screened and their eligibility checked, leaving 14 articles that were included and synthesised in the final review.

Results. Overall, data indicated positive associations between EMS and substance use across clinical and non-clinical populations; clinical populations obtained higher EMS scores than their non-clinical comparisons, and specific EMS were associated with specific substances, but the findings were mixed. **Conclusions**. Conclusions of the synthesis of data were complicated by the lack of research in this area. Further research investigating EMS and substance use is recommended, to explain the mixed findings. Other factors (such as avoidant coping styles) that might influence the relationship could be considered.

Medical Subject Headings (MeSH): Schemas, addiction, substance use, dependence, systematic review.

Introduction

Substance misuse is a growing problem in the UK. In a survey, approximately 1 in 12 adults aged 16-59 in 2015/2016 had taken illicit substances in the past year (Office for National Statistics [ONS], 2017). Whilst the amount of people using illicit substances had remained fairly constant since the previous year, the amount of hazardous substance use (indicated by hospital admissions) had risen by 11% since 2014/2015. In 2015/2016, there were 8621 hospital admissions with a primary diagnosis of drug-related mental health and behavioural disorders. Furthermore, the prevalence of novel psychoactive substances (NPS), described by the media as 'legal highs', and the misuse of prescribed medication is also a growing concern that presents as more difficult to capture (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2015, 2016). There are indications that the misuse of NPS is common in clinical mental health populations (Stanley, Mogford, Lawrence, & Lawrie, 2016) and in non-clinical populations (Khaled et al., 2016). The misuse of alcohol in the UK population is widespread, and alcohol is considered to be one of the most harmful substances (e.g. Nutt, King, & Phillips, 2010). In 2014/2015 there were approximately 1.1million admissions due to an alcohol-related disorder (alcohol abuse or dependence), injury or condition (ONS, 2016), which had increased by 3% from the previous year.

Taken together, substance use (including drugs and alcohol) have personal, systemic and national costs. Despite the growing concerns of substance misuse in the UK population, there has been little robust research into the cognitive-developmental factors that might influence substance misuse. However, there has been recent clinical and research interest in the role of schemas and substance use.

Theoretical Conceptualisation of Schemas

The concept of schemas is not new. Schemas which were also referred to as 'core beliefs' were initially proposed by Beck (1967), who suggested that negative self-schemas (a

set of negative and pessimistic beliefs and expectations about oneself) were acquired through early childhood experiences, and were partly responsible for depression and unhelpful coping styles. However, the concept of schemas or core beliefs proposed by Beck, did not fully capture the complexity of more pervasive and problematic psychopathologies, such as personality disorders and problematic and avoidant coping styles such as substance misuse.

While there are a number of different definitions and types of schemas (Dattilio 2006), this review focuses on Early Maladaptive Schemas (EMS), which have been defined as a "theme or pattern comprised of memories, emotions, cognitions and bodily sensations regarding oneself and one's relationship with others" (Young, Klosko, & Weishaar, 2003, p.7). The clinical/practical applications of EMS were developed by Young (1990) in the first questionnaire to measure EMS (Young Schema Questionnaire), and the initiation of the Schema Therapy Institute in the 1990s. Subsequent clinical and research interests resulted in the development of schema therapy for the treatment of pervasive psychological problems, such as borderline personality disorder (Young, Klosko, & Weishaar, 2003) and dual-focussed schema therapy for personality disorder and co-occurring substance misuse (Ball & Young, 2000).

Eighteen EMS have been defined, which include emotional deprivation, mistrust/abuse, emotional inhibition, defectiveness/shame, social isolation/alienation, dependence/incompetence, abandonment/instability, vulnerability to harm or illness, enmeshment / underdeveloped self, failure, subjugation/invalidation, entitlement/grandiosity, insufficient self-control, self-sacrifice, unrelenting standards/hyper-criticalness, approval-seeking / recognition seeking, negativity/pessimism, and punitiveness) and are believed to fall under four key schema domains: disconnection and rejection, impaired autonomy and performance, impaired limits, and excessive responsibility and standards (Young, 2014).

Theoretically, EMS and their domains are considered to develop through unfulfilled needs during childhood. Five core emotional needs have been identified: (1) the need for secure attachment to others; (2) autonomy, competence and sense of identity; (3) freedom to express needs and emotions; (4) play and spontaneity; and (5) reasonable constraints and self-control. EMS develop when these needs are unfulfilled and they become maladaptive when they fail to adapt in response to changing circumstances. The schemas that were appropriate as a child, can interfere with an individual's ability to function and form healthy adult relationships. EMS therefore serve as a template to process experiences throughout adulthood (Young et al., 2003) and are believed to be stable constructs that are resistant to change (Riso et al., 2006). Schema therapy draws upon cognitive-behavioural, attachment, psychodynamic, and emotion-focused theories to reduce the EMS associated with pervasive psychological problems and has received extensive empirical attention in recent years.

Research Findings into the Role of EMS

EMS have been associated with a range of pervasive psychological problems, including borderline personality disorder, antisocial personality disorder, psychosis (Taylor & Harper, 2016), substance use (Ball & Young, 2000), eating disorders (Waller, Kennerley, & Ohanian, 2007), post-traumatic stress disorder (Gray, Maguan, & Litz, 2007), and obsessive-compulsive disorder (Sookman & Pinard, 1999). The findings from these studies suggest that EMS are trans-diagnostic structures present across clinical populations, particularly those which have been associated with trauma and attachment problems. It has also been suggested that people might misuse substances in part, due to poor self-control/impulsivity (Griffin, Scheier, & Botvin, 2009) and as an avoidant coping strategy for unwanted experiences (Holderness, Brooks-Gunn, & Warren, 1994); avoidant coping was demonstrated in a sample of people who abused alcohol (Brotchie, Hanes, Wendon, & Waller, 2006). In this study, the severity of alcohol use was associated with greater avoidance of affective arousal. This

indicates that some people might misuse substances to mitigate the psychological distress associated with EMS. Indeed, there is some evidence that EMS mediate the relationship between post-traumatic distress symptomatology and illicit substance use (Lecigne & Tapia, 2016). These studies suggest a link between EMS and avoidant coping strategies, including alcohol and substance misuse; however, there is a distinct lack of systematic analysis of the relationship between EMS and substance misuse.

In a systematic review of the efficacy of schema therapy across disorders, schema change and disorder-specific symptom change were reported in 11 out of 12 identified studies selected for review (Taylor, Bee, & Haddock, 2017); however, none of the articles included in the review included a substance use sample. The authors of this review also identified that despite many studies reporting efficacy of schema therapy for symptom reduction, many failed to include a measure of schema change. Another systematic review investigated the evidence base for schema therapy (Masley, Gillanders, Simpson, & Taylor, 2011), but this identified only two articles that included schema therapy for people with substance misuse (Ball, 2007; Ball, Cobb-Richardson, Connelly, Bujosa & O'Neill, 2005) and neither of these studies included a measure of schema change; hence, the specific change mechanisms remain unclear.

Rationale

Substance misuse is a growing problem in the UK, but little is known about the cognitive-developmental risk factors that might underlie substance misuse. The presence of EMS has begun to be investigated, but research has been limited by lack of EMS measurement. It would be beneficial to systematically capture the literature base for the relationship between EMS and substance use to help identify if EMS are risk factors that might inform preventative strategies and improve treatment for people who use substances.

Objectives and Research Question

Previous literature reviews have explored the association between EMS and a range of mental health difficulties, and the effectiveness of schema therapy for a range of clinical presentations, but none have captured the literature base for the relationship between EMS and substance use. The current literature review will therefore systematically review past research to identify if previous publications have identified a relationship between EMS and substance use, whilst also exploring the methods of data measurement/collection and analysis. To the author's knowledge, this is the first systematic review that has examined the relationship between EMS and substance use.

Method

This review was informed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and checklist (Liberati et al., 2009).

Search Strategy

Following several scoping searches, a search of electronic databases (PsychINFO, PubMed, SCOPUS and Web of Science) from their inception until September 2017 was conducted using the search terms (schema*) AND (substance* OR addict* OR alcohol* OR opiate* OR cocaine OR amphetamine* OR stimulant* OR hallucinogen*).

Scopus subject area restrictors were 'psychology' and 'social sciences'. PsychINFO searches were restricted to 'peer-reviewed' journals. The restrictors 'English language only' and 'human species not other animals' were applied to all databases.

Screening and Selection

Following deduplication, remaining articles were screened for their relevance by their titles and abstracts for key words (e.g. schemas and substance use). Those identified were further screened against the eligibility criteria. The selected journal articles were then read in

full, to determine if they were appropriate for inclusion within the review based on the eligibility criteria. Queried articles were discussed with a second reviewer.

Studies were included if they were:

- Published in English, peer-reviewed journals
- Empirical studies with quantitative methodology
- Conducted within any setting
- Studies that recruited human participants of any population and not animals.
- Studies that measured EMS (such as the Young Schema Questionnaire, long or short form, any version)
- Studies that evaluated the relationship between EMS and substance misuse (including alcohol and drug use) or made comparisons between substance user/addict groups and healthy controls.

Studies were excluded if they were:

- Unpublished, due to potential risks of methodological flaws.
- Studies that examined only addiction to nicotine, gambling, Internet use, or those related to eating disorders (e.g. laxatives).

Data Extraction

Data was extracted by the primary author and discussed with the research supervisors. Specific queries regarding the eligibility of included studies were discussed with the primary supervisor. In the case of missing or unclear data, authors were contacted to attempt to source additional information.

Data Analysis

The Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh, Lawton, Gardner, & Armitage, 2011) was utilised to review the selected studies. The QATSDD (Appendix C) provides a standardised approach to evaluate both qualitative and

quantitative literature and has been found to have good reliability and validity (Sirriyeh et al., 2011). It is a 16-item tool; responses to each item range between 0 and 3. The review identified studies with a range of designs. The author of this review conducted an independent quality assessment, which was then cross-checked by an independent reviewer (HR). Reasons for discrepancies were discussed until scores were mutually agreed. Due to the limited literature in this area, studies were not excluded on the basis of quality assessment scores.

Results

The electronic and hand searches identified 1754 journal articles, which, once duplicates were removed, left 858 unique citations to be screened for inclusion. Their titles and abstracts were assessed for their relevance to the review, resulting in 26 potential citations being retained. After applying inclusion criteria to these full-text papers, 12 citations were excluded; eleven did not analyse the relationship between EMS and substance use or the comparison of data between groups of substance users with healthy controls, and one article compared the EMS of substance users with the EMS of their parents. The latter paper was excluded due to difference in demographics (particularly age), making it difficult to compare groups. Therefore, fourteen journal articles were included in the systematic review. The process of selecting relevant journal articles is shown in Figure 1.

Detailed quality assessment scores are reported in Table 1, and the characteristics of the studies selected for review are shown in Table 2. The results were synthesised narratively to capture the overall findings and outcomes of each study. A meta-analysis was not indicated due to the high heterogeneity of participant characteristics of substance users (including gender and country of research), the type of substance researched and the varied reporting of effect sizes across the studies (Blundell, 2014).

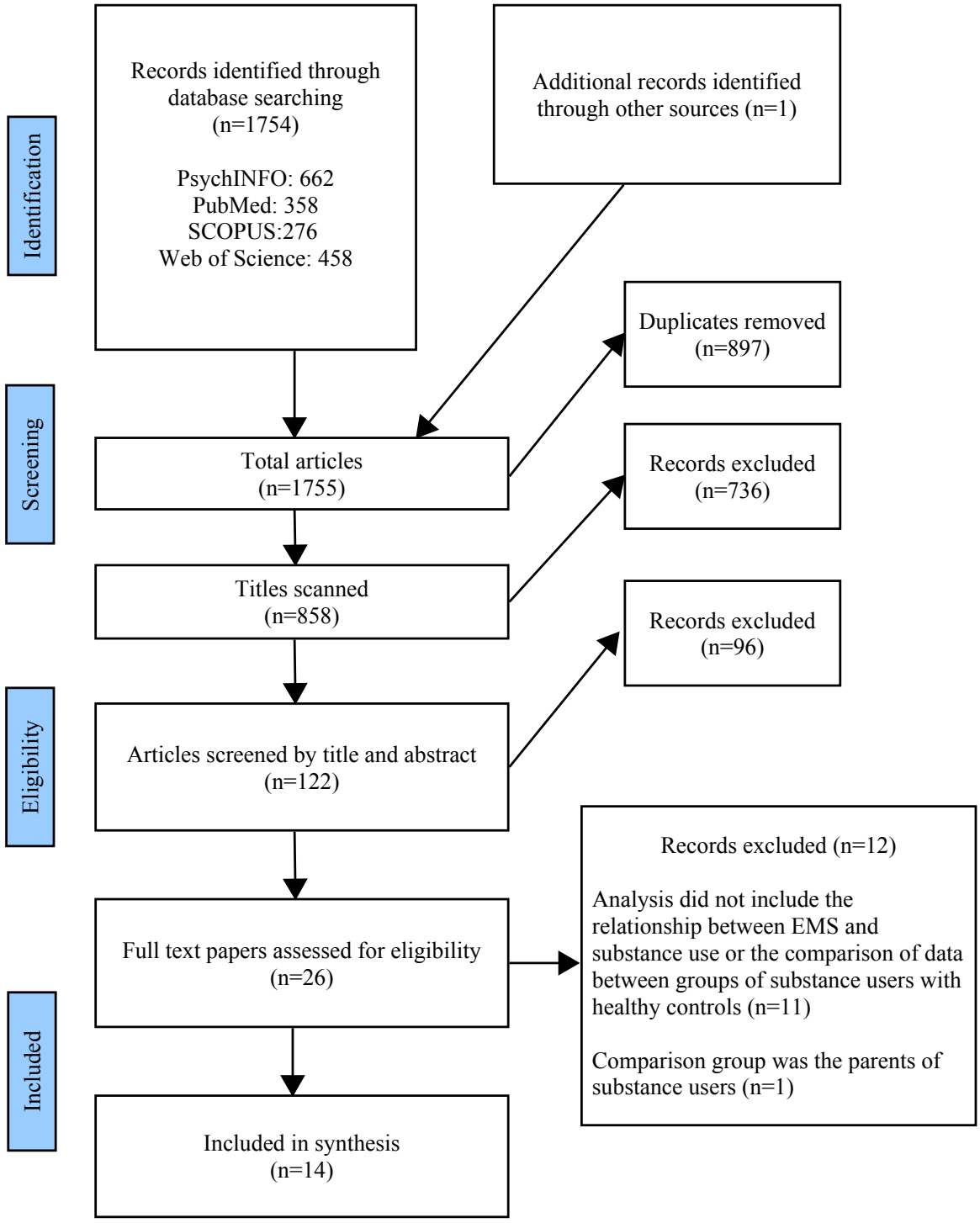

Figure 1. Flow diagram of included studies in the systematic review

Overview of the Included Studies

All studies identified utilised quantitative methodology with cross-sectional designs, one of which also included a cohort design (Roper, Dickson, Tinwell, Booth, & McGuire,

2010). One of the studies was conducted in Australia (Aaron, 2013), two were conducted in the UK (Brotchie, Meyer, Copello, Kidney, & Waller, 2004; Roper et al., 2010), two were conducted in Iran (Khosravani, Alvani, Seidisarouei, Amirinezhad, & Shojaee, 2017; Khosravani, Mehdizadeh, Dortaj, Alvani & Amirinezhad, 2017) while the others were all carried out in the USA. The studies were carried out over a 13-year period, the earliest in 2004 and the most recent in 2017.

Participant Characteristics

The 14 studies included a total of 4359 participants, including 3090 participants in treatment for their substance use and 1269 people that were 'healthy' comparisons. Sample size varied considerably; the smallest sample included 30 participants (Aaron, 2013), the largest was 1056 participants (Khosravani, Alvani et al., 2017). It was not possible to report the overall demographic information for this review as two studies (Khosravani, Mehdizadeh, et al., 2017; Shorey, Anderson, & Stuart, 2011) did not provide figures for their healthy control group and overall data. Of those studies that reported mean age, this ranged from 20.4 to 45.1 years old for clinical groups of substance users and from 18.4 to 33.6 years old for healthy control groups. Two studies included young people aged 16 years and above (Khosravani, Alvani, et al., 2017) and one from aged 17 years and above (Shorey, Stuart, & Anderson, 2014), whereas the other studies included adult only (18+ years) populations. Only the nine USA-based studies reported the ethnicity of their sample. The majority of participants in these samples were 'Non-Hispanic Caucasian' (ranging from 85-98%).

All studies included clinical samples of participants, with the exception of one (Aaron 2013) that investigated non-clinical participants only. Eight studies included a healthy control group; two of these studies included comparisons of substance users with their intimate partners (Shorey, Anderson, & Stuart, 2011, 2013), two included undergraduate psychology students (Shorey, Stuart, & Anderson, 2013, 2014), one included participants from a further

education college (Roper et al., 2010), one was a 'mixed population of non-students' (Brotchie et al., 2004). No selection data of the 'healthy' control group was reported in two studies (Khosravani, Alvani, et al., 2017; Khosravani, Mehdizadeh, et al., 2017).

Most studies investigated mixed samples of males and females, with the exception of one study that investigated male substance users only (Shorey, Anderson, & Stuart, 2014), one that investigated 'young male substance abusers' and their comparisons (Shorey, Stuart, & Anderson, 2013), and one study that explored substance use in 'young adult females' (Shorey, Stuart, & Anderson, 2014).

Most studies investigated alcohol use amongst other substance use, except two studies that investigated drug use only (Khosravani, Mehdizadeh, et al., 2017; Khosravani, Alvani, et al., 2017) and another that investigated alcohol use only (Roper et al., 2010). Most studies grouped alcohol and various drug use together in a single clinical/non-clinical group, whereas one study compared differences between alcohol abusers, opiate abusers, combined alcohol and opiate abusers and a non-clinical group (Brotchie et al., 2004), one compared differences between users of natural substances, synthetic substances and healthy participants (Khosravani, Alvani, et al., 2017) and one compared group differences between abusers of opiate, stimulant and cannabis with healthy participants (Khosravani, Mehdizadeh, et al., 2017). Participants in the clinical groups were all treatment-seeking. Most studies recruited from residential/inpatient settings, with the exception of two studies that recruited participants from a community clinic (Khosravani, Alvani, et al., 2017; Khosravani, Mehdizadeh, et al., 2017).

Table 1
Quality Assessment Ratings Using QATSDD

	Aaron (2013)	Brotchie, Meyer, Copello, Kidney, & Waller (2004)	Elmquist, Shorey, Anderson, & Stuart (2015)	Elmquist, Shorey, Anderson, & Stuart (2016)	Khosravani, Alvani, Seidisarouei, Amirinezhad, & Shojaee (2017)	Khosravani, Mehdizadeh, Dortaj, Alvani, & Amirinezhad (2017)	Roper, Dickson, Tinwell, Booth, & McGuire (2010)	Shorey, Anderson, & Stuart (2011)	Shorey, Anderson, & Stuart (2013)	Shorey, Anderson, & Stuart (2014)	Shorey, Elmquist, Anderson, & Stuart (2015a)	Shorey, Elmquist, Anderson, & Stuart (2015b)	Shorey, Stuart, & Anderson (2013)	Shorey, Stuart, & Anderson (2014)
Explicit theoretical framework	2	3	3	3	3	2	3	3	3	3	3	3	3	3
Statement of aims/objectives	3	3	3	3	3	2	3	3	3	3	3	3	3	2
Clear description of research setting	3	2	3	3	3	2	3	3	3	3	3	3	3	3
Evidence of sample size considered	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Representative sample of target group of a reasonable size	1	2	3	3	2	2	1	2	2	2	2	2	3	2
Description of procedure for data collection	2	1	2	2	2	2	2	2	2	2	2	2	3	3
Rationale for choice of data collection tools	3	1	3	3	3	3	3	3	3	3	2	2	3	3
Detailed recruitment data	2	0	3	0	1	1	3	1	1	1	1	2	2	2
Statistical assessment of reliability and validity of measurement tool(s)	2	2	0	0	2	2	2	0	0	0	0	0	0	0
Fit between research question and method of data collection	2	3	3	3	3	3	3	2	2	2	2	2	2	3
Fit between research question and method of analysis	2	3	3	3	3	3	3	3	2	3	3	2	3	3
Good justification for analytical method selected	3	2	3	3	3	3	3	3	3	3	2	2	2	2
Evidence of user involvement in design	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strengths and limitations critically discussed	1	2	3	3	3	3	3	3	3	3	3	3	3	3
Total score (Percentage Score)	26 (62)	24 (57)	32 (76)	29 (69)	31 (74)	27 (64)	32 (76)	29 (69)	27 (64)	28 (67)	26 (62)	26 (62)	30 (71)	29 (69)

Quality Assessment

As no qualitative studies were identified for inclusion in the review, the specific QATSDD items for qualitative studies were excluded. Total scores ranged from 24 (57%) to 32 (76%) out of a possible 42. There was similarity in the presentation and quality of the studies, perhaps as some were conducted by the same authors. All studies were rated as zero on two of the QATSDD criteria, namely 'evidence of sample size considered' and 'evidence of user involvement in design'. Overall, the studies provided an explicit theoretical framework with clear aims and objectives. The method of data collection was well documented, but the reporting of reliability and validity of the assessment tools were omitted for many of the studies. Many of studies clearly outlined their strengths and limitations.

Measuring EMS

A scoping search identified that the Young Schema Questionnaires were unique to measuring EMS; hence, measures of EMS were fairly consistent within the studies reported. The Young Schema Questionnaire Long Form, third version (YSQ-L3; Young & Brown, 2003) was employed for nine out of the fourteen studies selected for review, whereas the Young Schema Questionnaire Short Form, second version (YSQ-S2; Young 1998) was employed for five of the selected studies, and was translated into a Persian version for two of these studies (Khosravani, Alvani, et al., 2017; Khosravani, Mehdizadeh, et al., 2017).

The YSQ-L3 is a 232-item self-report questionnaire measuring 18 EMS (abandonment, approval-seeking, defectiveness, dependence/incompetence, emotional deprivation, emotional inhibition, enmeshment, entitlement, failure, insufficient self-control, mistrust/abuse, negativity/pessimism, punitiveness, self-sacrifice, social isolation, subjugation, unrelenting standards, vulnerability) across 5 EMS domains (disconnection and rejection, impaired autonomy and performance, impaired limits, other-directedness, and overvigilance and inhibition). Conversely, the YSQ-S2 is a self-report 75-item questionnaire

measuring 15 EMS (similar to the YSQ-L3, but with the absence of measuring the EMS of approval-seeking, negativity / pessimism and punitive) across the same 5 EMS domains as the YSQ-L3.

Of those studies that used the YSQ-S2, two reported data on the 15 individual EMS (Brotchie et al., 2004; Roper et al., 2010), two reported data on the 5 EMS domains (Khosravani, Alvani, et al., 2017; Khosravani, Mehdizadeh, et al., 2017) and one reported data using both individual EMS and their domains (Aaron, 2013). From the studies that used the YSQ-L3, four reported data on the individual EMS (Elmquist et al., 2015; Shorey, Anderson, & Stuart, 2011, 2013, 2014), and five reported data on the EMS domains (Elmquist, et al., 2016; Shorey, Anderson, & Stuart, 2013, 2014; Shorey et al., 2015a, 2015b). Only four of the studies reported on the reliability or validity of the YSQ in their samples. Internal reliability for these included studies were good, (based on $\alpha \geq .7$ recommended by Kline, 1999). Brotchie et al. (2004) reported an overall Cronbach's alpha for all 15 individual EMS ($\alpha > .7$), as did Roper et al. (2010), (whereby αs>.88 for all 15 EMS). Khosravani, Alvani, et al. (2017) and Khosravani, Mehdizadeh et al. (2017) both reported Chronbach's alphas that ranged from .83 to .88 for the 5 EMS domains. Good validity, reliability, and factor structure for the YSQ-L3 (Cockram, Drummond, & Lee, 2010; Saariaho, Saariaho, Karila, & Joukamaa, 2009) and YSQ-S2 (Cui & Oei, 2010) has been demonstrated in previous studies.

Most studies reported EMS mean scores on a continuum, however, one study (Shorey, Anderson, & Stuart, 2011) also reported EMS categorised as low, medium, high and very high ranges in accordance with clinical guidelines (Young & Brown, 2003).

Substance Use Measures

A variety of measures were used to assess substance use among participants in the included studies. These included the Alcohol, Smoking, Substance Involvement Screening

Test (ASSIST; World Health Organisation [WHO], 2002), an 8-item questionnaire delivered as a structured interview to assess multiple substance use and multiple problems. This had good test-retest reliability (WHO, 2002) and internal consistency which ranged from α=.54 to α=.85 (Aaron, 2013). Eight of the fourteen studies used both The Drug Use Disorders Identification Test (DUDIT; Stuart, Moore, Kahler, & Ramsey, 2003), which is a 14-item self-report questionnaire to measure the frequency of various substances in the past 12 months, and the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De la Fuente, & Grant, 1993), which is a 10-item self-report measure to assess alcohol use in the previous 12 months. A score of 8 or more on the AUDIT is indicative of hazardous drinking (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Saunders et al., 1993). Notably, none of the studies included in this review reported reliability of the DUDIT and AUDIT with their participant samples. Previous research has demonstrated adequate reliability across multiple samples for the DUDIT (Stuart, Moore, Ramsey, & Kahler, 2004; Stuart et al., 2008) and for the AUDIT (Babor et al., 2001).

The Leeds Dependence Questionnaire (LDQ; Raistrick et al., 1994) was used in one study (Roper et al., 2010) with good reliability for their alcohol-dependent group and control group (all αs>.87). Two studies (Brotchie et al., 2004; Shorey, Anderson, & Stuart, 2011) used the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV; American Psychiatric Association, 2003) only, to assess for the presence of a substance use disorder. The DSM-IV provides information on diagnostic criteria with reported adequate reliability and validity in substance use disorders (Hasin et al., 2013). However, the studies that only used this measure were limited by the lack of specificity in examining the relationship between EMS and substance use. Two studies (Khosravani, Alvani, et al., 2017; Khosravani, Mehdizadeh, et al., 2017) did not provide information as to how they measured the presence or severity of substance use.

The use of self-report measures (whether survey or clinical interview) for substance use are notoriously compromised in their validity; they are typically affected by an under-reporting bias (Bellis, Hughes, Cook, & Morleo, 2009). Specifically, self-reported alcohol consumption only accounts for 40-60% of alcohol sales in England (Boniface & Shelton, 2013). Observations from friends or family could be considered; however, their reports might be also affected by under-reporting or concealment of alcohol use. Other methods such as biological specimen testing (urine, blood, saliva, hair, breath, sweat, meconium) might provide more valid measurements of substance use (Hadland & Levy, 2016); however, these methods can be affected by tampering, and the invasive nature of this testing might deter potential participation and research could be affected by sampling bias.

Data Analysis

Multiple methods were used to analyse the data including descriptive and inferential statistics. Many studies used correlation and regression analyses to explore the association between EMS and substance use; most commonly, bivariate correlations were used (Elmquist et al., 2015, Elmquist et al., 2016; Shorey, Anderson, & Stuart, 2011; Shorey, Anderson, & Stuart, 2014; Shorey et al., 2015a, Shorey et al., 2015b), followed by hierarchical multiple regression analyses (Shorey et al., 2015a, Shorey et al., 2015b) and Spearman's rho (Aaron, 2013).

Multivariate analyses were employed to examine group differences between variables, the most common being MANCOVA (Brotchie et al., 2004; Shorey, Anderson & Stuart, 2013; Shorey, Stuart & Anderson, 2014), followed by MANOVA (Khosravani, Alvani et al., 2017; Khosravsani, Mehdizadeh et al., 2017); one study used ANCOVA (Shorey, Stuart & Anderson, 2013), another used ANOVA (Khosravani, Alvani et al., 2017). Repeated measures ANOVA was used in a cohort study to measure the effects of EMS changes through intervention over time (Roper et al., 2010). Other methods to analyse group

differences were Mann Whitney U tests (Aaron, 2013; Shorey, Anderson, & Stuart, 2011), and t-tests for matched samples (Roper et al., 2010; Shorey, Anderson, & Stuart, 2013.

Synthesised Findings

Overall, all of the included studies identified a relationship between EMS and substance use, however, the specific EMS or domains varied in the strength of their association with substance use between studies, and the type of substance measured.

Associations Between Schema Domains and Substance Use. Six studies investigated the correlations between EMS domains and substance use. (Aaron, 2013; Elmquist et al., 2016; Shorey, Anderson, & Stuart 2013, 2014; Shorey et al., 2015a, 2015b).

The EMS domain 'disconnection and rejection' was significantly positively correlated with amphetamine use in a non-clinical sample (Aaron, 2013), and with increased drug use (measured by DUDIT) in a mixed (but predominantly male) clinical sample of people with a substance use disorder (Shorey, Anderson, & Stuart, 2013), but not significantly associated with drug use in a clinical sample of male substance users (Shorey, Anderson, & Stuart, 2014) or a clinical sample of mixed substance users (Shorey et al., 2015b). Disconnection and rejection was also significantly positively associated with alcohol use in a clinical sample where substance use was measured alongside compulsive sexual behaviours (Elmquist et al., 2016) and within a clinical sample of male substance users (Shorey et al., 2015a).

The EMS domain 'Impaired autonomy and performance' was positively associated with cannabis use in a non-clinical sample (Aaron, 2013), and with drug use in a clinical sample of male substance users (measured by DUDIT), (Shorey, Anderson, & Stuart, 2014), and in a mixed sample of substance users (Shorey et al, 2015b). Impaired autonomy was significantly positively correlated with alcohol use in a clinical sample of male sample of substance users (Shorey et al., 2015a), but not in a mixed clinical sample of male and female substance abusers (Shorey et al., 2015b). Impaired autonomy was the only EMS domain that

was significantly associated with alcohol use in the intimate partners of substance abusers (Shorey, Anderson, & Stuart, 2013).

'Impaired limits' was not significantly associated with substance use in a non-clinical sample (Aaron, 2013); however, this EMS domain was significantly positively correlated with drug use in a clinical sample of male substance users, (Shorey, Anderson, & Stuart, 2014), and a mixed sample of substance abusers (Shorey et al., 2015b). Notably, in this mixed sample of male and female substance users, the only EMS domain that was significantly associated with alcohol use was impaired limits (Shorey et al., 2015b). The impaired limits EMS domain was positively associated with alcohol use in a sample where substance use was measured alongside compulsive sexual behaviours (Elmquist et al., 2016), and with alcohol use in a clinical sample of male substance users (Shorey et al., 2015a).

'Other directedness' was not associated with substance use in a non-clinical sample (Aaron, 2013). Other-directedness was significantly positively associated with increased drug use in clinical samples (Shorey, Anderson, & Stuart, 2013, Shorey, et al., 2015b), but not significantly associated with drug use in a clinical sample of male substance users (Shorey, Anderson, & Stuart, 2014). Other-directedness was not associated with alcohol use in a clinical sample of male substance users (Shorey et al., 2015a).

'Overvigilance and inhibition' was not associated with substance use in a non-clinical sample (Aaron, 2013), but was significantly positively correlated with drug use (measured by DUDIT) in a clinical sample of male substance users (Shorey, Anderson, & Stuart, 2014) and a mixed sample of substance abusers (Shorey et al., 2015b). This EMS domain was not associated with alcohol use in a clinical sample of male substance users (Shorey et al., 2015a), but was found to be significantly positively associated with alcohol use in a mixed clinical sample where substance use was measured alongside compulsive sexual behaviours. (Elmquist et al., 2016).

Two articles reported that none of the EMS domains were significantly associated with alcohol use in clinical samples; one included a clinical sample of male and female substance users (Shorey, Anderson, & Stuart, 2013), the other included a clinical sample of male substance abusers (Shorey, Anderson, & Stuart, 2014). However, all five EMS domains were positively correlated with drug use in a mixed sample of substance users (Elmquist et al., 2016) and within a male sample of substance users (Shorey, et al., 2015a).

Associations Between Individual EMS and Substance Use. When the Young Schema Questionnaires were further broken down to analysing individual EMS in two studies, the results yielded further specific information regarding the relationship between EMS and substance use. In a non-clinical sample (Aaron, 2013), social isolation was significantly positively correlated with cannabis use, failure was associated with amphetamine use, dependence/incompetence was associated with cannabis and amphetamines, and subjugation was associated with amphetamine use. In a sample whereby substance use and eating disorder symptomatology was concurrently assessed (Elmquist et al., 2015), 17 out of 18 EMS (not emotional deprivation) were positively associated with substance use and 12 EMS (not dependence, enmeshment, failure, self-sacrifice, subjugation or vulnerability to harm) were positively associated with both drug and alcohol use.

Between Group Comparisons. Significantly higher scores on all individual EMS were reported in clinical groups (alcohol abuse, opiate abuse, combined alcohol and opiate abuse) relative to a non-clinical comparison group (Brotchie et al., 2004). In this study, the combined alcohol/opiate abuse group had higher levels of emotional inhibition, subjugation and vulnerability to harm EMS than the single substance misuse group (Brotchie et al., 2004). This suggests that polysubstance misuse is associated with higher EMS scores.

The type of substance might be associated with differences in EMS. Users of natural substances (including opium, henbane, cannabis and hash-ish) and users of synthetic

substances (including methamphetamine, crack and heroin) had significantly higher scores on EMS domains than 'healthy' participants (Khosravani, Alvani, et al., 2017). Users of natural substances scored higher mean scores on all EMS domains than synthetic substance users (Khosravani, Alvani, et al., 2017). Specifically, users of natural substances had significantly higher scores on the EMS domain of impaired limits, in comparison to users of synthetic substances.

Significant differences were found between four groups of people who used opiates, stimulants, cannabis and a healthy comparison group for all five EMS domains (Khosravani, Mehdizadeh, et al., 2017); users of opiates had higher mean scores than the other groups in all EMS domains. People who used opiates had significantly higher scores on all EMS domains than people who used cannabis (Khosravani, Mehdizadeh, et al. 2017). People who used stimulants had significantly higher scores on all EMS domains than people who used cannabis (Khosravani, Mehdizadeh, et al. 2017). No significant differences on the EMS domains were found between people who used opiate or stimulants (Khosravani, Mehdizadeh, et al. 2017). People with alcohol dependency reported significantly higher on 12 out of 15 EMS (not unrelenting standards, self-sacrifice, and entitlement) than a non-clinical group (Roper et al., 2010).

When comparing a clinical sample of people with substance use disorders with their intimate partners, all 18 patient EMS were significantly positively associated with the emotional deprivation schemas of their intimate partners, and 13 out of 18 EMS were associated with intimate partner abandonment (Shorey, Anderson, & Stuart, 2011). Patients scored significantly higher on defectiveness, dependence, vulnerability to harm and insufficient self-control than their intimate partners, but partners scored significantly higher on self-sacrifice (Shorey, Anderson, & Stuart, 2011). Patients scored higher on all EMS domains and on 13 out of 18 individual EMS than their intimate partners (Shorey, Anderson,

& Stuart, 2013). Patients in treatment for substance abuse scored higher on all 5 EMS domains and 13 out of 18 EMS than their intimate partners (Shorey, Anderson, & Stuart, 2003).

Male substance abusers scored significantly higher on 9 out of 18 EMS (abandonment, mistrust/abuse, defectiveness, failure, dependency, vulnerability, enmeshment, insufficient self-control, negativity/pessimism) than a non-clinical sample of male psychology students (Shorey, Stuart, & Anderson, 2013). Female substance abusers scored significantly higher on 16 out of 18 individual EMS (not self-sacrifice and unrelenting standards), in comparison to female psychology students (Shorey, Stuart, & Anderson, 2014).

Additional Findings. Associations between EMS and other conditions (such as depression and anxiety, eating disorders, aggression and compulsive sexual behaviours) within participant samples that used substances were reported. For example, participants that were in treatment for alcohol dependency reported higher levels of depression and anxiety than the non-clinical participants (Roper et al., 2010). In male substance users, neither alcohol nor drug use predicted aggression, but EMS domains did (Shorey et al., 2015a). In a mixed sample, anxiety was significantly associated with drug use, but not alcohol use, and depression was significantly correlated with alcohol and drug use (Shorey et al., 2015b). Alcohol use, drug use, symptoms of anxiety and all five EMS domains were predictors of depressive symptoms, whereas gender, depressive symptoms, and all five EMS domains were significant predictors of anxiety (Shorey et al., 2015b). It is possible that EMS might be associated with avoidant coping styles that underlie not only substance use, but a range of behaviours (such as eating disorders, compulsive sexual behaviours, aggression) to cope with emotional distress and that specific individual EMS or domains might be associated with specific types of substances, although the findings in this review are mixed.

Two articles in this review reported that all schema domains were highly correlated with each other (Shorey, Anderson, & Stuart, 2013; Shorey, Anderson & Stuart, 2014). There were other reported correlations between variables; for example, AUDIT scores were significantly negatively correlated with DUDIT scores in males (Shorey, Anderson, & Stuart, 2014; Shorey et al., 2015a) and in a mixed sample of males and females (Shorey et al., 2015b). Age was significantly positively correlated with alcohol use, and significantly negatively correlated with drug use (Elmquist et al., 2016; Shorey et al., 2015b) in a substance abuse mixed population; however, in a male sample of substance abusers, alcohol was not significantly correlated with age, but drug use remained significantly negatively correlated with age (Shorey, et al., 2015a).

Risk of Bias

Five of the fourteen studies included in the review were conducted by the same authors (Ryan Shorey, Scott Anderson, & Gregory Stuart) and these authors were involved in four further studies (with Joanna Elmquist) included in the review. The journal articles selected for review may therefore represent the clinical and research interests of these few authors, the homogeneity of research setting, and highlight the dearth of research exploring the relationship between EMS and substance use. A further risk of bias is that one researcher Scott Anderson, who is one of the authors of some of the papers included in the review, is also the clinical director of a residential treatment programme whereby some participants were recruited.

Table 2
Summary of Reviewed Articles

Citation/ Author (Country)	**Study Design**	**Sample/ Participants**	**Outcome measures**	**Data analytical method**	**Study Findings**	**Effect size (if reported)**	**Quality Rating**
Aaron (2013) (Australia)	Cross-sectional	Non-clinical sample *N*=30 non-clinical student participants (25 females, 5 males). Mean age=24 (No SD reported).	**EMS:** Young Schema Questionnaire Short Form (YSQ-S2) measuring 15 schemas over 5 domains (Young, 1998) **Substance use:** Alcohol, Smoking, Substance Involvement Screening Test (World Health Organisation, 2002)	Correlation Spearman's rho Mann-Whitney U	Significant associations between the EMS domain 'disconnection and rejection' and tobacco (r=.435, p=.016) and amphetamine use (r=.451, p=.012); between 'impaired autonomy' and cannabis use (r=.361, p=.05). The 'impaired limits', 'other directedness' and 'overvigilance and inhibition' domains were not associated with substance use. Social isolation EMS was associated with cannabis use (U=35.5, p=.02); failure EMS was associated with amphetamine use (U=26.0, p=.04). Dependence/incompetence EMS was associated with cannabis (U=38.5, p=.03) and amphetamines (U=41.0, p=.04). Subjugation EMS was associated with amphetamines (U=38.0, p=.02). Emotional inhibition EMS was related to tobacco use (U=29.0, p=.05).	Medium effect sizes (r>.3) reported in 2 EMS domains (see previous section), but no significant effects for the other 3 EMS domains.	26
Brotchie, Meyer,	Cross-sectional	*N*=184 3 clinical groups, 1 non-	**EMS:** YSQ-S2	MANCOVA	Significant overall effect of group $F(45,461) = 2.96$, p<.001, for	None reported	24

Copello, Kidney & Waller (2004) (UK)		clinical group Alcohol abuse group n=44 (21 men, 23 women, mean age = 43.8 years, SD=10.1) Opiate abuse group *n*=36, 24 men, 12 women, mean age = 27.7 years, SD=9.53. Combined alcohol and opiate users (*n*=17), 13 men, 4 women, mean age = 29.9 years, SD= 8.77 Non-clinical group *n*=87, mean age = 33.6 years, SD=9.07)	measuring 15 EMS (Young, 1998) **Substance use:** Clinician assessed presence substance use disorder using Diagnostic and Statistical Manual of Mental Disorders, Fourth edition (DSM-IV; American Psychiatric Association, 2003)		12/15 EMS after controlling for age. Higher EMS scores were reported in the clinical groups relative to the non-clinical comparison group. Least significant difference tests $p<.01$. Reliable differences: the combined alcohol/opiate abusers had high levels of emotional inhibition EMS, both groups that abused alcohol (alcohol abusers and combined alcohol/opiate abusers had high levels of subjugation and vulnerability to harm EMS		
Elmquist, Shorey, Anderson & Stuart (2015) (USA)	Cross-sectional	Clinical group of patients in residential treatment for a substance use disorder where eating disorder symptoms were also assessed. *N*=519; 387 men, 132 women. Mean age=42.16 (SD=10.70). 57.1% had alcohol dependence, 18.8% opioid dependence, 11.8% polysubstance dependence, 2.4% cannabis dependence,	**EMS:** Young Schema Questionnaire Long Form – 3rd Edition (YSQ-L3; Young & Brown, 2003), measuring 18 schemas. **Substance Use:** Alcohol Use Disorders Identification	Bivariate correlations	DUDIT scores were significantly positively correlated with 17 out of 18 EMS (not emotional deprivation) and AUDIT scores were significantly associated with 12 out of 18 EMS (not dependence, enmeshment, failure, self-sacrifice, subjugation or vulnerability).	Small effect sizes ($r>.1$) were reported for 15/18 EMS and their association with DUDIT (ranging from .10 to .29). Emotional deprivation, self-sacrifice and unrelenting standards fell below .10 level. Small effect sizes were reported between 12 EMS and AUDIT	32

		9.9% other.	Test (AUDIT; Saunders, Aasland, Babor, De La Fuenta, & Grant, 1993). Drug Use Disorders Identification Test (DUDIT; Stuart, Moore, Kahler, & Ramsey, 2003)			scores (ranging from .10 to .18). Dependence, enmeshment, failure, self-sacrifice, subjugation and vulnerability were below .10 level	
Elmquist, Shorey, Anderson & Stuart (2016) (USA)	Cross-sectional	Clinical group of patients in residential treatment for a substance use disorder, where compulsive sexual behaviours were also measured. *N*=260; 198 men, 62 women. Mean age=41.4 years (SD=10.36). 54.3% had alcohol dependence, 21.1% opioid dependence, 13.7% polysubstance dependence, 3.9% alcohol abuse, 7.0% other.	**EMS:** YSQ-L3 (Young & Brown, 2003), measuring 18 EMS. **Substance Use:** AUDIT; (Saunders et al., 1993). DUDIT; Stuart et al., 2003)	Bivariate correlations	AUDIT scores were significantly positively correlated with the schema domains of disconnection and rejection (r=.15, p<.01), impaired limits (r=.15, p<.05), and over vigilance and inhibition (r=.18, p<.01). DUDIT scores were significantly positively correlated with each of the 5 schema domains: disconnection & rejection (r=.16, p<.01), impaired autonomy (r=.32, p<.01), impaired limits (r=.34, p<.01), other directedness (r=.25, p<.01, overvigilance and inhibition (r=.19, p<.01).	Small effect sizes reported for the associations between AUDIT and 3 schema domains. The effect sizes for impaired autonomy and other directedness were <.10 level. Small to medium effect sizes were reported in the associations between DUDIT and all 5 EMS domains; medium effect sizes were found for impaired limits and impaired autonomy	29
Khosravani, Alvani, Seidisarouei,	Cross-sectional	*N*=1056 3 groups: users of natural	**EMS:** YSQ-S2 (Young, 1998),	MANOVA, ANOVA	Overall significant differences between the 3 groups (Wilks λ = .48, F=80.87, p<.001) on test	Overall between-group effects, large effect sizes	31

Amirinezhad & Shojaee (2017) (Iran)		substances (*n*=352, 55% female, 45% male), users of synthetic substances (n=352, 47% female, 53% male) (mean age of substance users=29); a healthy comparison group (*n*=352, 45% female, 55% male). Mean age = 29 (SD=5.03). Participants in the substance use groups were recruited from an addiction treatment clinic.	measuring 15 EMS, Persian version. No measure of substance use. The BIS/BAS scale (Carver & White, 1994), Persian version to measure goal-directed motivation, response upon receipt of reward and desire for novel rewards.		measures. Significant differences between groups were found in EMS, BIS all BAS subscales and defense styles (p<.001), with users of natural substances having higher mean scores in all EMS domains, BIS, and immature defense style than synthetic substance users. Least significant difference post hoc tests showed that for all EMS domains, BIS/BAS subscales, and defense styles there were significant differences between users of natural and synthetic substances with healthy subjects (p<.001). Additionally, for the EMS domain of impaired limits, and neurotic defense style there were significant differences between users of natural and synthetic substances (p<.001).	(η^2=.14+) were found for disconnection & rejection (η^2=.66); impaired autonomy & performance (η^2=.58); impaired limits (η^2=.36); other-directedness (η^2=.41); and over-vigilance & inhibition (η^2=.40)	
Khosravani, Mehdizadeh, Dortaj, Alvani & Amirinezhad (2017) (Iran)	Cross-sectional	*N*=962 3 substance use clinical groups recruited from an addiction treatment clinic: users of opiates (*n*=398, 256 males, 142 females), stimulants (n=248, 112 females,136 males), cannabis (n=116, 84 males, 32 females) drugs. Mean age=30 (SD=6.03)	**EMS:** YSQ-S2 (Young, 1998), Persian version, measuring 15 EMS. No measure of substance use. The BIS/BAS scale (Carver &	MANOVA	Overall significant differences between the 4 groups (Wilks λ = .31, F=34.89, p<.001) on test measures. Significant differences between groups were found in all 5 EMS domains (p<.001), with users of opiates having higher mean scores in all EMS domains, BIS, and immature defense style (p<.001). Scheffe post hoc tests showed that in all EMS domains, there were significant differences between cannabis, stimulant and	For overall between-group effects, large effect sizes (η^2 =.14+) were found for disconnection & rejection (η^2=.51); impaired autonomy & performance (η^2=.47); other-directedness (η^2=.23); and over-vigilance & inhibition (η^2=.21).	27

		A healthy comparison group (n=200, 88 females, 112 males).	White, 1994), Persian version to measure goal-directed motivation, response upon receipt of reward and desire for novel rewards.		opiate drug users with the healthy comparison group. In all EMS domains, BIS/BAS subscales (except for BAS-FS), and defense styles there were significant differences between users of opiate and cannabis (p<.001), as well as between stimulant and cannabis users (p<.05), but no significant differences were found between opiate and stimulant drug users in the test measures.	A medium effect size (η^2 =.06+) was found for impaired limits (η^2=.12).	
Roper, Dickson, Tinwell, Booth & McGuire (2010) (UK)	Cross-sectional (non-clinical group) and Cohort study (clinical group)	*N*=100 Clinical group of alcohol-dependent participants at an inpatient alcohol treatment unit. (*n*=50; 29 men, 21 women). Mean age=45.08 years, SD=10.07. Non-clinical group (*n*=50; 30 men, 20 women) Mean age=32.7 years, SD=8.66.	**EMS:** YSQ-S2 measuring 15 EMS (Young, 1998) **Substance use:** Leeds Dependence Questionnaire (Raistrick et al., 1994) **Other measures:** Beck Anxiety Inventory (Beck & Steer, 1993). Beck Depression Inventory (Beck, Steer & Brown, 1996).	Repeated measures ANOVA, Paired t-tests for within-subject comparisons	Significant main effect of EMS from T1 to T2: F(14, 574)=6.98, p<.001. No main effect of time F(1,41) =1.17, p>.05. Significant EMS X time interaction F(14,574)=13.42 p<.001. Significant 3-way interaction for time X EMS X depression F(14,546)=1.82 p<.03, but not for anxiety. Clinical group reported higher EMS than non-clinical group (p<.001) at T1, and at T2 (p<.01). Bonferonni alpha criterion showed clinical group did not differ significantly from non-clinical group on 9/15 EMS (all ps ≥.003) at T2 (post-treatment). But, clinical group continued to report significantly higher than the non-clinical group on 6 EMS at T2.	None reported	32

Shorey, Anderson & Stuart (2011) (USA)	Cross-sectional	*N*=80 Patients (*n*=40) from an adult residential program with a primary substance use disorder diagnosis (42.5% with diagnosis of alcohol dependence, 32.5% opioid dependence, 7.5% cocaine dependence 7.5% cannabis dependence, 5% polysubstance dependence, 2.5% alcohol abuse, 2.5% cannabis abuse. Non-clinical group of their intimate partners (*n*=40). Patients mean age was 39.2 years (SD=8.7), 90% males. Age and gender was not reported for the non-clinical group of intimate partners.	**EMS:** YSQ-L3 measuring 18 EMS (Young, & Brown, 2003) **Substance use:** No measure used. Diagnosis was made using the DSM-IV.	Correlations, Mann-Whitney U tests.	All 18 patient EMS were positively and significantly associated with the emotional deprivation schema of intimate partners. 13 out of 18 schemas were significantly associated with intimate partner abandonment EMS. Patients scored significantly higher on defectiveness (*U*=594, *p*<.05, *d*=.67), failure (*U*=624, *p*<.05, *d*=.42), dependence (*U*=601, *p*<.05, *d*=.48), vulnerability (*U*=579, *p*<.05, *d*=.56) and insufficient self-control (*U*=349, *p*<.001, *d*=.1.13). A trend for patients scoring higher on approval-seeking (*U*=614, *p*<.07, *d*=.38), but partners scored significantly higher on self-sacrifice (*U*=434, *p*<.001, *d*=.74).	A large effect size (*d*=.8+) was found between groups on the insufficient self-control EMS (*d*=1.13). Medium effect sizes were found for vulnerability (*d*=.56), self-sacrifice (*d*=.74) and defectiveness (*d*=.67). Enmeshment and subjugation were <.2. The remaining EMS yielded mall effect sizes (*d*=.2+) between groups (ranging from .22 to .48).	29
Shorey, Anderson & Stuart (2013) (USA)	Cross-sectional	*N*=102 (51 dyads) Patients (*n*=51) from an adult residential program with a primary substance use disorder diagnosis (45.1% with alcohol dependence, 25.5% polysubstance dependence, 23.5%	**EMS:** YSQ-L3 measuring 18 EMS (Young & Brown, 2003) **Substance use:** DUDIT (Stuart et al. 2003); AUDIT	Matched sample t-tests MANCOVA	Patients scored significantly higher on the AUDIT (t(100)=7.18, *p*<.001) and DUDIT (t(100)=7.03, *p*<.001) than their intimate partners. All schema domains were highly correlated with each other for both patients and partners. For patients, increased drug use was associated with increased scores of schema domains of disconnection	A large effect size between groups was found for the impaired limits domain (*d*=1.17). Medium effect sizes were found for disconnection & rejection (*d*=.64), impaired autonomy	27

		opioid dependence, dependence and 2% each for cannabis dependence, phencyclidine dependence and amphetamine abuse) and their intimate partners (*n*=51). Most patients were male (72.5%) with a mean age of 41.00 (SD=10.24). For intimate partners, most were female (70.6%), mean age of 40.23 (SD=9.98)	(Saunders et al., 1993)		and rejection and other-directedness. Alcohol use was not significantly associated with EMS for patients. Impaired autonomy and alcohol use were positively associated for partners. Patients' drug use, disconnection and rejection, and other directedness schema domains were all significantly associated with higher scores for intimate partners' impaired limits domain With AUDIT and DUDIT entered as covariates and schema domains as dependent variables, patients scored higher on all 5 EMS domains. Patients scored significantly higher than their partners on 13/18 EMS.	(*d*=.60) and for overvigilance and inhibition (*d*=.66). A small effect size was found for other-directedness (*d*=.33). Large effect sizes were reported in 3 individual EMS: insufficient self-control (*d*=1.3) approval-seeking (*d*=.83), defectiveness (*d*=.81). Most of the other effect size differences fell into the small or medium range, with the exception of emotional deprivation, which had no significant effect (*d*=.04)	
Shorey, Anderson & Stuart (2014) (USA)	Cross-sectional	Clinical sample of men (*N*=98) in residential treatment for primary diagnosis of substance abuse disorder, where antisocial personality disorder (ASPD) and borderline personality disorder (BPD) was also assessed. Most (53.7%) had alcohol dependence,	**EMS:** YSQ-L3 measuring 18 EMS (Young & Brown, 2003) **Substance use:** DUDIT (Stuart et al. 2003) AUDIT (Saunders et	Bivariate correlations	DUDIT scores were significantly correlated with the EMS domains of impaired autonomy *(r*=.21, p<.05), impaired limits (*r*=.31, p<.01), and over-vigilance and inhibition (*r*=.21, p<.05), but not for disconnection & rejection or other-directedness. AUDIT scores were not significantly correlated with any of the EMS domains. Both ASPD and BPD symptoms	For correlations between DUDIT and EMS domains, there was a medium effect size for impaired limits, and small effect sizes for the remaining 4 domains. were below the small effect size range.	28

		21.1% opioid dependence, 16.8% polysubstance dependence, 2.1% cannabis abuse, 2.1% amphetamine abuse, and 1.1% each for sedative dependence, 'other' substance dependence, alcohol abuse, and opioid abuse. Mean age was 38.89 (SD=10.60).	al., 1993)		were positively correlated with EMS domains (all ps<.01).	The associations between the AUDIT and the EMS domains were all below threshold for small effect size (*r*<.1)	
Shorey, Elmquist, Anderson & Stuart (2015a) (USA)	Cross-sectional	Clinical sample of men (*N*=106) in residential treatment for primary diagnosis of substance abuse disorder, whereby ASPD was also assessed. Most (61.3%) had alcohol dependence, 17% opioid dependence, 4.7% polysubstance dependence. Remaining diagnoses included a mix of substances. Mean age was 41.24 (SD=11.06).	**EMS:** YSQ-L3 measuring 18 EMS (Young & Brown, 2003) **Substance use:** DUDIT (Stuart et al. 2003) AUDIT (Saunders et al., 1993)	Bivariate correlations, hierarchical multiple regression analyses	Alcohol use was significantly positively correlated with EMS domains of disconnection and rejection (*r*=.31, *p*<.01), impaired autonomy (*r*=.20, *p*<05) and impaired limits (*r*=.23, *p*<.05), but not other directedness, and over-vigilance and inhibition. DUDIT scores were significantly positively correlated with all 5 EMS domains; including disconnection and rejection (*r*=.26, *p*<.01), impaired autonomy (*r*=.42, *p*<.001), other-directedness (*r*=.24, *p*<.05), over-vigilance and inhibition (*r*=.27, *p*<.01) and impaired limits (*r*=.41, *p*<.001). With the exception of other-directedness, all schema domains were significantly positively associated with aggression. All schema domains were positively associated with ASPD features (all	Associations between AUDIT and EMS domains showed a medium effect size for disconnection & rejection; small effect sizes were found for the other 4 domains (*r*s ranged from.16 to .23). Medium effect sizes were found between DUDIT scores and impaired limits and impaired autonomy. The remaining 3 domains had small effect sizes (*r*s ranged from .24 to .27).	26

					ps<.001).		
Shorey, Elmquist, Anderson & Stuart (2015b) (USA)	Cross-sectional	Clinical sample of patients (*N*=122; 81 males, 41 females) in residential treatment for a substance abuse disorder. The most common diagnosis was alcohol dependence (50%), followed by opioid dependence (26.2%), polysubstance dependence (13.9%), cannabis dependence (3.3%) and 'other' (6.6%). Mean age was 37.36 (SD=12.47).	**EMS:** YSQ-L3 measuring 18 EMS (Young & Brown, 2003) **Substance use:** DUDIT (Stuart et al. 2003) AUDIT (Saunders et al., 1993) **Other:** The Psychiatric Diagnostic Questionnaire (PDSQ; Zimmerman, 2002) to measure symptoms of depression and anxiety.	Bivariate correlations, hierarchical multiple regression analyses.	The only EMS domain that was significantly associated with alcohol use was impaired limits (r=.27, p<.01). Drug use was significantly associated with impaired autonomy and performance (r=.25, p<.05), impaired limits (r=.22, p<.05), other directedness (r=.21, p<.05), and over vigilance and inhibition (r=.23, p<.05). Anxiety was significantly associated with drug use (r=.36, p<.001), but not alcohol use. Depression was significantly correlated with alcohol use (r=.19, p<.05) and drug use (r=.37, p<.001). Alcohol use, drug use, symptoms of anxiety and all 5 EMS domains were predictors of depressive symptoms, accounting for 63% (ΔR^2=.14, p<.001) of the variance. Gender, depressive symptoms and all 5 EMS domains were significant predictors of anxiety, accounting for 63% (ΔR^2=.15, p<.001) of the variance.	All associations between AUDIT and the 5 EMS domains yielded small effect sizes (ranging from r=.16 to .27). All associations between DUDIT and the 5 EMS domains yielded small effect sizes (ranging from r=.19 to .25).	26
Shorey, Stuart and Anderson (2013) (USA)	Cross-sectional	*N*=276 Clinical group: Young adult males (n=101) in residential treatment for substance use. Most common diagnosis: polysubstance	**EMS:** YSQ-L3 measuring 18 EMS (Young & Brown, 2003) **Substance use:**	ANCOVA tests for each of the 18 EMS for between group comparisons.	With the exception of self-sacrifice and unrelenting standards, the substance use group had higher mean scores of EMS than the non-clinical group. Significant differences between groups were found for 9 out of 18	A large effect size was reported for insufficient self-control (d=.1.17); medium effect sizes were found for abandonment,	30

		dependence (42.6%), followed by opioid dependence/abuse (38.6%), alcohol dependence/abuse (10.9%), cannabis dependence (3%), cocaine dependence (2%), sedative/ hypnotic /anxiolytic (2%), and amphetamine dependence (1%). The mean age was 21.84 years (SD=1.98) Non-clinical control group: male undergraduate (n=175) psychology students; mean age was 18.87 (SD=2.00).	DUDIT (Stuart et al. 2003) AUDIT (Saunders et al., 1993)		EMS. These were abandonment, mistrust/abuse, defectiveness, failure, dependence, vulnerability, enmeshment, insufficient self-control, negativity/pessimism, whereby all *p*s<.001.	mistrust/abuse, defectiveness, failure, dependence, vulnerability, and enmeshment (*d*s ranged from .53 to .73). Small effect sizes were reported for emotional deprivation, social isolation, entitlement, subjugation, emotion inhibition, negativity and punitiveness (*d*s ranged from .24 to .45). Self-sacrifice, unrelenting standards, and approval-seeking EMS fell below threshold for small effect size (*d*<.2)	
Shorey, Stuart & Anderson (2014) (USA)	Cross-sectional	*N*=276 Clinical group: Young adult female patients (*n*=180) from an inpatient substance use treatment program. The most common diagnosis was opioid abuse/dependence (46.2%), followed by polysubstance	**EMS:** YSQ-L3 measuring 18 EMS (Young & Brown, 2003) **Substance use:** DUDIT (Stuart et al. 2003) AUDIT (Saunders et	MANCOVA tests for each of the 18 EMS for between group comparisons	The clinical group scored higher than the non-clinical control group on 16 EMS (*p*s<.01). The groups did not significantly differ on the EMS of self-sacrifice and unrelenting standards.	Large effect sizes between groups were reported for insufficient self-control (*d*=.1.51), abandonment (*d*=.94), enmeshment (*d*=91) dependence (*d*=.87), and mistrust/abuse (*d*=.81); medium	29

	dependence (21.7%), cannabis abuse/ dependence (9.4%), alcohol abuse/ dependence (8.4%), cocaine abuse/ dependence (7.3%), sedative abuse/ dependence (5%), amphetamine dependence (1.7%) and hallucinogen dependence (0.3%). The mean age was 20.43 years (SD=2.23; range 17-26 years) The non-clinical comparison group (n=284) were female psychology undergraduates. Mean age was 18.38 (SD =0.83; range 18-24).	al., 1993) Diagnoses were made through use of the DSM-IV (APA, 2000)	effect sizes reported for defectiveness, failure, vulnerability, entitlement, subjugation, negativity, and punitiveness (*d*s ranged from .52 to .72). The remaining EMS had small effect sizes (*d*s ranged from .22 to .44), with the exception of unrelenting standards (*d*=.14)

Discussion

The aims of this systematic review were to identify and appraise previous research exploring EMS and substance use, review methods of measuring and analysing EMS and substance use in the selected studies, and determine if previous research had found a relationship between EMS and substance use.

Summary of Main Findings

Fourteen articles that met the inclusion criteria were included in the review. Assessment of these articles using QATSDD obtained scores ranging from 24 to 32 from a potential maximum score of 42. None of the articles included power calculations or discussed statistical power in their results. None referred to service user involvement in the development of the research designs. Two measures of EMS were used, but the reporting and analysis of data varied between studies. A variety of tools were used to measure substance use, and participants' type of substance use varied. Overall, all the studies included in the review identified a relationship between EMS and substance use (using correlational or regression analyses) and higher EMS scores were found in clinical groups of people who misused substances in comparison to healthy control groups (using mainly multivariate analyses). Specific EMS and their domains were associated with substance use, and the type of substance measured. However, the results between studies were mixed and some were limited by small sample sizes.

Measuring EMS and Substance Use

Nine of the studies used the YSQ-L3 (Young & Brown, 2003) and the remaining five studies employed the YSQ-S2 (Young 1998) to measure EMS, but the reporting of data varied between studies even when using the same measure. Within the studies that used the YSQ-S2, two reported data on the 15 individual EMS subscales, two reported data on the five EMS domains and one reported data using both individual EMS and their domains. From the

studies that used the YSQ-L3, four reported data on the individual EMS, and five reported data on the EMS domains. Most studies reported EMS mean scores on a continuum, however, one study categorised EMS as low, medium, high and very high, based on clinical cut-off scores. Only four of the studies reported on the reliability or validity of the YSQ in their samples, but internal reliability for these included studies was good.

Most studies investigated alcohol use amongst other substance use, except two studies that investigated drug use alone (they did not include people that misused alcohol, nor did they measure alcohol consumption), and another that investigated alcohol use only. Most studies grouped alcohol and various drug use together in a single clinical or non-clinical group, whereas one study compared differences between alcohol abusers, opiate abusers, combined alcohol and opiate abusers and a non-clinical group, one compared differences between users of natural substances, synthetic substances and healthy participants, and one compared group differences between abusers of opiate, stimulant and cannabis with healthy participants. Participants in the clinical groups were all treatment-seeking. Most studies recruited from residential/inpatient settings, with the exception of two studies that recruited participants from a community clinic.

A variety of measures were used to assess substance use among participants in the included studies. The most common measures were the AUDIT (Saunders et al., 1993) and DUDIT (Stuart et al., 2003), which were used in eight of the fourteen studies; however, none of the studies included in this review reported reliability of the AUDIT or DUDIT with their participant samples, but good reliability of these measures was reported from previous research. The ASSIST (WHO, 2002) was used in one study, which reported adequate reliability in some, but not all of the subscales in their sample. The LDQ (Raistrick et al., 1994) was used in one study with good reliability for their alcohol-dependent group and control group. Two studies used the DSM-IV (American Psychiatric Association, 2003)

criteria only, to assess for the presence of a substance use disorder, but the rationale for using this was not reported. Two studies did not provide information as to how they measured the presence or severity of substance use.

Relationship Between EMS and Substance Use

The studies identified in the review gave some insight into the relationship between EMS and substance use. Two studies found that all five EMS domains were positively correlated with drug use; this was reported in a mixed sample of substance users (Elmquist et al., 2016) and within a male sample of substance users (Shorey, et al., 2015a). However, the findings between other studies were inconsistent. Some reported significant positive associations between some EMS domains and drug use, whilst others found no significant associations in some EMS with drug use, but significant associations with other EMS. Some reported significant positive associations between EMS and alcohol use, but some did not find significant associations. The heterogeneity of substance use samples and how EMS and substance use was measured and analysed makes it difficult to compare results of studies and therefore draw firm conclusions.

However, the most common significant associations between EMS domains and substance use in clinical samples were found within the 'impaired limits' domain. This seems consistent with previous theory and research which suggests the role of impulsivity / poor self-control in substance misuse (Holderness et al., 1994; Griffin et al., 2009). Of the five studies that reported EMS domains in clinical samples, three studies (Shorey et al, 2015a, 2015b; Elmquist et al., 2016) showed significant positive associations between impaired limits and alcohol use, but two did not (Shorey, Anderson, & Stuart, 2013, Shorey, Anderson & Stuart, 2014). The studies that did not find a significant association between impaired limits and alcohol use reported no other significant associations between alcohol use and other EMS domains. Notably, Shorey et al. (2015b) found that the impaired limits domain

was the only EMS domain associated with alcohol use. Positive associations between impaired limits and drug use were consistently found in four studies (Shorey et al., 2015a 2015b; Elmquist et al., 2016; Shorey, Anderson, & Stuart, 2014), but not for one study (Shorey, Anderson, & Stuart, 2013) that compared the variables between substance abusers and their intimate partners. It is possible that the presence or measurement of intimate relationships influence the EMS of people who use substances, although further research would need to investigate this association before conclusions could be made.

In one study (Aaron, 2013) that only investigated a non-clinical sample, the EMS domain 'impaired autonomy and performance' was positively associated with cannabis use, and 'disconnection and rejection' was significantly positively correlated with amphetamine. In this sample, individual EMS were also measured. The EMS social isolation was significantly positively correlated with cannabis use, failure was associated with amphetamine use, dependence/incompetence was associated with cannabis and amphetamines, and subjugation was associated with amphetamine use. No other significant associations were found between individual EMS or their domains, and substance use (including drug and alcohol use). The results might indicate that specific EMS and their domains are associated with type of drug use, however, it is not possible to generalise these findings due to the data being gathered from one small, non-clinical sample.

Eight studies compared the EMS of clinical groups with the EMS of non-clinical 'healthy' groups. Overall, higher scores (i.e. increased severity of EMS) were found for clinical groups relative to their non-clinical comparisons. In one study (Brotchie et al., 2004), significantly higher scores on all individual EMS were reported in clinical groups (alcohol abuse, opiate abuse, and combined alcohol and opiate abuse) relative to the non-clinical comparison group, and higher scores were obtained for polysubstance misuse compared to single substance misuse.

Users of natural substances and users of synthetic substances had significantly higher scores on all five EMS domains than 'healthy' participants (Khosravani, Alvani, et al., 2017). Significant differences were found between three groups of people in treatment for substance use (opiates, stimulants, cannabis) and a healthy comparison group for all five EMS domains (Khosravani, Mehdizadeh, et al., 2017). People with alcohol dependency reported significantly higher scores on 12 out of 15 EMS (not unrelenting standards, self-sacrifice, and entitlement) than a non-clinical group (Roper et al., 2010).

Two studies compared people with substance use disorders with their intimate partners; one compared the individual EMS between groups, the other compared both individual EMS and the EMS domains between groups. It was found that patients scored significantly higher on defectiveness, dependence, vulnerability to harm and insufficient self-control than their intimate partners, but partners scored significantly higher on self-sacrifice (Shorey, Anderson & Stuart, 2011). In another study, patients scored higher on all five EMS domains (the largest difference, was for the impaired limits domain) and on 13 out of 18 individual EMS than their intimate partners (Shorey, Anderson, & Stuart, 2013). These studies give some insight into the relational aspects of substance misuse, however the results should be interpreted with caution, as only two studies, both by the same authors with a combined total of 91 dyads were included.

In a study that compared a clinical sample of male substance abusers, with a non-clinical sample of male psychology students, (Shorey, Stuart, & Anderson, 2013), the findings showed that overall, the clinical group had higher scores of individual EMS than their healthy comparisons, with the exception of self-sacrifice and unrelenting standards. The clinical group scored significantly higher on 9 out of 18 EMS (abandonment, mistrust/abuse, defectiveness, failure, dependency, vulnerability, enmeshment, insufficient self-control, negativity/pessimism). When comparing a clinical sample of female substance abusers with a

non-clinical sample of female psychology undergraduates, the clinical group scored significantly higher on 16 out of 18 individual EMS. The groups did not differ significantly on the EMS of self-sacrifice and unrelenting standards (Shorey, Stuart, & Anderson, 2014).

These studies all demonstrated significant associations between EMS and substance use and differences between clinical treatment-seeking groups and non-clinical groups and the severity of EMS. Overall, the clinical groups obtained higher EMS scores than their non-clinical comparisons, however, in some studies, there were no significant differences between groups on the EMS of unrelenting standards, self-sacrifice, and entitlement, and some non-clinical groups scored higher on these EMS.

Strengths and Limitations of The Studies

Most of the studies were conducted with treatment-seeking samples of people who misused substances in the USA. The demographics of patients that access private healthcare system within the USA might differ from patients that access public health services, which might limit the generalisability of the findings. However, the samples of mixed drug use in residential settings may serve to increase ecological validity. Most studies included males and females in their sample, although the majority of participants were male. This might be representative of clinical settings whereby males are over-represented in healthcare services for substance misuse; indeed, in the UK males were nearly three times more likely to be admitted to hospital than women (ONS, 2017). Two of the studies included male only samples and one study included a female only sample, which limits the ability to generalise findings in these studies.

The exact age range of participants was not reported in many studies; however, the mean age ranged from 20.4 to 45.1 years old for clinical groups and from 18.4 to 33.6 for non-clinical groups. The age range is of particular relevance as it was found that age was negatively correlated with drug use, and positively correlated with alcohol use. Future studies

might investigate EMS and substance use with a broader age-range of non-clinical participants.

Five studies did not include a non-clinical sample. Of the studies that included non-clinical samples, some were limited by their small sample size, and none of the studies reported a rationale for their sample size, such as power calculations. The only study that investigated a non-clinical sample only, recruited a small sample of thirty participants to investigate 18 schemas across five domains. This suggests a lack of research into the role of EMS and substance use in general non-clinical populations. Future research should employ larger samples, which would allow for statistical power to examine all 18 individual EMS.

The studies that measured drug use, only measured illicit drug use. None measured the misuse of prescribed medications or non-controlled novel psychoactive substances ('legal highs'); the misuse of these substances is a growing concern in the UK and globally (Khaled et al., 2016; Stanley et al., 2016; ECDDA, 2015, 2016). The lack of research in this area suggests that the cognitive-developmental factors, specifically the EMS in these populations are not yet understood. Alcohol was the only non-illicit substance measured in the studies and there is evidence that this is problematic in the UK clinical and non-clinical population (Nutt, King, & Phillips, 2010; ONS, 2016). Only one of the included studies compared the EMS of 'alcohol dependent' patients with a non-clinical sample. Further research is needed to better understand the role of EMS and alcohol in non-clinical populations.

All the studies were either cohort or cross-sectional designs, therefore causality cannot be inferred. Only one study utilised a cohort design to measure EMS change over time. Future research should incorporate longitudinal designs in both clinical and non-clinical populations to better understand the stability or sensitivity to changes in EMS within treatment for substance use, to clarify specific change mechanisms associated with recovery.

Strengths and Limitations of this Review

The search strategy included studies from a range of methodologies, therefore increasing the scope for all evidence on EMS and substance use to be collated. However, only fourteen studies were included in the final review; all had cross-sectional designs, one also included a cohort design. This number is surprisingly low, given the emerging body of literature on EMS, and may be reflective of the strict inclusion criteria for the study. For example, only published research in journal articles were included for quality purposes. The exclusion of unpublished research and studies not available in English language suggests potential publication bias (Dundar & Fleeman, 2014).

The use of a second reviewer and research team to discuss and cross check paper selection and quality assessment reduced selection bias and human error. However, the review could have been improved by including the second reviewer in data extraction to improve accuracy and consistency.

The inclusion of two studies that compared people who misused substances, with their intimate partners represented a 'grey area' for the review. These studies met the selection criteria, however, the relational aspect between participants was unique for these studies, which might explain the differences in EMS in these participants compared to other studies. This does, however, provide some preliminary indication of the attachment relationships of people that misuse substances and the needs, EMS and protective factors of these people and their carers, which could be targeted within treatment, such as couples therapy. Additionally, having a significant adult attachment experience might protect against or modify EMS. Further research could explore the association between attachment, EMS and substance use.

Clinical Implications

Consistent with other research into EMS, the relationship with substance use is complex and multi-dimensional. It appears that problems associated with EMS and substance

use are present across clinical and non-clinical groups. It seems plausible that the pervasive nature of EMS can impact on adult attachment relationships including therapeutic relationships. Previous research has identified strong associations between EMS and adult attachment (Platts, Tyson, & Mason, 2002). As therapeutic relationships are strong predictors of outcomes (Gilbert & Leahy, 2007), it seems important that the presence of EMS are assessed with clients, to inform psychological formulations so that the therapeutic relationship can be tailored to attend to clients' previous experience of unfulfilled needs, and in turn improve outcomes. This could apply to clients attending addiction services and other mental health services due to the co-morbid, trans-diagnostic nature of EMS.

Treatment approaches could include reviewing clients' coping skills, identifying and reducing EMS, and developing more adaptive skills for coping with difficulties associated with EMS. Treatment approaches, such as schema therapy, which integrates a number of therapies to help clients reprocess early childhood attachment experiences and trauma might be helpful in modifying EMS.

Conclusion

To the author's knowledge this is the first systematic review that collates and summarises the evidence regarding the relationship between EMS and substance use. The review outcomes highlight the complex nature of the relationship between these variables, and the results are mixed. The review identifies preliminary evidence indicating that people who have higher scores of EMS (particularly in the impaired limits domain) are more likely to misuse substances, including drugs and alcohol, although causality cannot be inferred. Since theory and research suggest that EMS develop through unmet childhood needs with caregivers, future research could develop the understanding of the relationship between attachment experiences, EMS and substance use. Investigating the role of attachment experiences might explain the mixed findings to date.

References

Aaron, D. J. (2013). Early maladaptive schemas and substance use: implications for assessment and treatment. *Addictive Disorders and their Treatment, 12*(4), 193-200. doi:10.1097/ADT.0b013e31827d8763

American Psychiatric Association (2003). *Diagnostic and statistical manual of mental disorders (DSM-IV®).* American Psychiatric Pub.

Babor, T. F., Higgins-Biddle, J. C., Saunders, J. G., & Monteiro, M. G. (2001). *The Alcohol Use Disorders Identification Test: Guidelines for use in primary care (2nd ed.)*. World Health Organisation.

Ball, S. A. (2007). Comparing individual therapies for personality disordered opioid dependent patients. *Journal of Personality Disorders, 21*(3), 305-321. doi.10.1521/pedi.2007.21.3.305

Ball, S. A., Cobb-Richardson, P., Connolly, A. J., Bujosa, C. T., & O'Neall, T. W. (2005). Substance abuse and personality disorders in homeless drop-in center clinics: Symptom severity and psychotherapy retention in a randomized clinical trial. *Comprehensive Psychiatry, 46*(5), 371-379. doi.10.1016/j.comppsych.2004.11.003

Ball, S. A., & Young, J. E. (2000). Dual focus schema therapy for personality disorders and substance dependence: Case study results. *Cognitive and Behavioral Practice, 7,* 270-281. doi:10.1016/S1077-7229(00)80083-8

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects.* New York: Harper & Row.

Beck, A. T., & Steer, R. A. (1993). *Manual for the Beck anxiety inventory.* San Antonio, TX: The Psychological Corporation.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck depression inventory-II.* San Antonio, TX: The Psychological Corporation.

Bellis, M. A., Hughes, K., Cook, P. A., & Morleo, M. (2009). *Off measure: How we underestimate the amount we drink*. London: Alcohol Concern.

Blundell, M. (2014). Understanding and synthesising my data. In A. Boland, M. G. Cherry, & R. Dickson (Eds.), *Doing a systematic review: A student's guide*. (pp. 99-123). London: Sage Publications.

Boniface, S., & Shelton, N. (2013). How is alcohol consumption affected if we account for under-reporting? A hypothetical scenario. *European Journal of Public Health*, *23*(6), 1076-1081. doi:10.1093/eurpub/ckt016.

Brotchie, J., Hanes, J., Wendon, P., & Waller, G. (2006). Emotional avoidance among alcohol and opiate abusers: The role of schema-level cognitive processes. *Behavioural and Cognitive Psychotherapy, 35,* 231-236. doi:10.1017/S1352465806003511

Brotchie, J., Meyer, C., Copello, A., Kidney, R., & Waller, G. (2004). Cognitive representations in alcohol and opiate abuse: The role of core beliefs. *British Journal of Clinical Psychology, 43,* 337-342. doi.10.1348/0144665031752916

Carver, C. S., & White, T. L. (1994). Behavioural inhibition, behavioural activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology, 67*(2), 319. doi:10.1037//0022-3514.67.2.319.

Cockram, D. M., Drummond, P. D., & Lee, C. W. (2010). Role and treatment of early maladaptive schemas in Vietnam veterans with PTSD. *Clinical Psychology and Psychotherapy*, *17*(3), 165–182. doi:10.1002/cpp.690

Cui, L., & Oei, T. P. (2010). Factor Structure and Psychometric Properties of the Young Schema Questionnaire (Short Form) in Chinese Undergraduate Students. *International Journal of Mental Health and Addiction, 9,* 645-655. doi:10.1007/s11469-010-9283-4

Dattilio, F. M. (2006). A cognitive-behavioral approach to reconstructing intergenerational family schemas. *Contemporary Family Therapy: An International Quarterly, 28*, 191–200. doi.10.1007/s10591-006-9005-z

Dundar, Y., & Fleeman, N. (2014). Developing my search strategy and applying inclusion criteria. In A. Boland, G. Cherry, R. Dickson (Eds.), *Doing a systematic review: A student's guide*. (pp. 35-62). London, England: SAGE Publications Ltd.

Elmquist, J., Shorey, R. C., Anderson, S. E., & Stuart, G. L. (2015). The relationship between early maladaptive schemas and eating-disorder symptomatology among individuals seeking treatment for substance dependence. *Addiction Research and Theory, 23*(5), 429-436. doi:10.3109/16066359.2015.1025063.

Elmquist, J., Shorey, R. C., Anderson, S. E., & Stuart, G. L. (2016). A preliminary investigation of the relationship between early maladaptive schemas and compulsive sexual behaviors in a substance-dependent population. *Journal of Substance Use, 21*(4), 349-354. doi:10.3109/14659891.2015.1029021.

European Monitoring Centre for Drugs and Drug Addiction (2015). *European drug report: Trends and developments.* Retrieved from: http://www.emcdda.europa.eu/attachements.cfm/att_239505_EN_TDAT15001ENN.pdf.

European Monitoring Centre for Drugs and Drug Addiction (2016). *EU drug markets report; In-depth analysis*. Retrieved from: https://dl.dropboxusercontent.com/u/566349360/library/ EU-Drug-Markets-Report-In-depth-Analysis.PDF.

Gilbert, P., & Leahy, R. L. (2007). *The Therapeutic Relationship in the Cognitive Behavioral Psychotherapies*. New York: Routledge.

Gray, M., Maguen, S., & Litz, B. T. (2007). Schema constructs and cognitive models of

posttraumatic stress disorder. In L. P. Riso, P. L. du Toit, D. J. Stein & J. E. Young (Eds.), *Cognitive schemas and core beliefs in psychological problems: A scientist-practitioner guide* (pp.59-92). Washington DC: American Psychological Association.

Griffin, K. W., Scheier, L. M., & Botvin, G. J. (2009). Developmental trajectories of self-management skills and adolescent substance use. *Health and Addictions, 9*(1), 15-37. doi:10.21134/haaj.v9i1.48

Hadland, S. E., & Levy, S. (2016). Objective testing – urine and other drug tests. *Child and Adolescent Psychiatric Clinics of North America, 25*(3), 549-565. doi:10.1016/j.chc.2016.02.005

Hasin, D. S., O'Brien, C. P., Auriacombe, M., Borges, G., Bucholz, K., Budney, A., …Grant, B. F. (2013). DSM-5 criteria for substance use disorders: Recommendations and rationale. *American Journal of Psychiatry, 170*(8), 834-851. doi.10.1176%2Fappi.ajp.2013.12060782

Holderness, C. C., Brooks-Gunn, J., & Warren, M. P. (1994). Co-morbidity of eating disorders and substance abuse review of the literature. *International Journal of Eating Disorders, 16*(1), 1-34. doi.10.1002/1098-108X(199407)16:1%3C1::AID-EAT2260160102%3E3.0.CO;2-T

Khaled, S. M., Hughes, E., Bressington, D., Zolezzi, M., Radwan, A., Badnapurkar, A., & Gray, R. (2016). The prevalence of novel psychoactive substances (NPS) use in non-clinical populations: A systematic review protocol. *Systematic Reviews, 5,* 195. doi:10.1186%2Fs13643-016-0375-5

Khosravani, V., Alvani, A., Seidisarouei, M., & Shojaee, D. (2017). Early maladaptive schemas, behavioural inhibition/approach systems, and defense styles in the users of natural and synthetic substances and healthy subjects. *Journal of Substance Use, 22*(2), 168-175. doi:10.3109/14659891.2016.1166272.

Khosravani, V., Mehdizadeh, A., Dortaj, A., Alvani, A., & Amirinezhad, A. (2017). Early maladaptive schemas, behavioural inhibition/approach systems, and defense styles in the abusers of opiate, stimulant, and cannabis drugs and healthy subjects. *Journal of Substance Use, 22*(3), 317-323. doi:10.1080/14659891.2016.1208776.

Kline, P. (1999). *The handbook of psychological testing* (2nd ed.). London: Routledge.

Lecigne, M., & Tapia, G. (2016). Post-traumatic stress disorder and addiction in illicit substances: The mediating role of early maladaptive schemas. *Pratiques Psychologiques,* doi:10.1016/j.prps.2016.06.001.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., ... Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Med*, *6*(7), e1000100. doi:10.1136/bmj.b2700

Masley, S. A., Gillanders, D. T., Simpson, S. G., & Taylor, M. A. (2011). A systematic review of the evidence base for schema therapy. *Cognitive Behavioural Therapy, iFirst article,* 1-18. doi:10.1080/16506073.2011.614274

Nutt, D. J., King, L. A., & Phillips, L. D. (2010). Drug harms in the UK: A multicriteria decision analysis. *Lancet, 376*(9752), 1558-1565. doi.10.1016/S0140-6736(10)61462-6

Office for National Statistics (2016). *Statistics on alcohol, England, 2016.* Retrieved from http://digital.nhs.uk/catalogue/PUB20999

Office for National Statistics (2017). *Statistics on drugs misuse, England 2017.* Retrieved from http://digital.nhs.uk/media/30572/Statistics-on-Drug-Misuse-England-2017-Report-/Any/drug-misu-eng-2017-rep

Platts, H., Tyson, M., & Mason, O. (2002). Adult attachment style and core beliefs: Are they linked? *Clinical Psychology and Psychotherapy, 9,* 332-348. doi:10.1002/cpp.345

Raistrick, D., Bradshaw, J., Tober, G., Weiner, J., Allison, J., & Healey, C. (1994). Development of the Leeds dependence questionnaire (LDQ): A questionnaire to measure alcohol and opiate dependence in the context of a treatment evaluation package. *Addiction (Abingdon, England), 89,* 563-572. doi:10.1111/j.1360-0443.1994.tb03332.x.

Riso, L. P., Froman, S. E., Raouf, M., Gable, P., Maddux, R. E., Turini-Santorelli, N.,… Cherry, M. (2006). The long-term stability of early maladaptive schemas. *Cognitive Therapy and Research, 30*(4)*,* 515-529. doi:10.1007/s10608-006-9015-z

Roper, L., Dickson, J. M., Tinwell, C., Booth, P. G., & McGuire, J. (2010). Maladaptive cognitive schemas in alcohol dependence: Changes associated with a brief residential abstinence program. *Cognitive Therapy and Research, 34,* 207-215. doi:10.1007/s10608-009-9252.

Saariaho, T., Saariaho, A., Karila, I., & Joukamaa M. (2009). The psychometric properties of the Finnish young schema questionnaire in chronic pain patients and a non-clinical sample. *Journal of Behavior Therapy and Experimental Psychiatry, 40*(1), 158–168. doi:10.1016/j.jbtep.2008.07.005.

Saunders, J. B., Aaland, O. G., Babor, T. F., De La Fuente, J. R., & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption II. *Addiction, 88,* 791—804.

Shorey, R., C., Anderson, S., & Stuart, G. L. (2011). Early maladaptive schemas in substance use patients and their intimate partners: A preliminary investigation. *Addictive Disorders & Their Treatment, 10*(4), 169-179. doi:10.1097/ADT.0b013e318214cd11.

Shorey, R., C., Anderson, S., & Stuart, G. L. (2013). Early maladaptive schemas of substance abusers and their intimate partners. *Journal of Psychoactive Drugs, 45*(3), 266-275.

doi:10.1080/02791072.2013.805982.

Shorey, R. C., Anderson, S., & Stuart, G. L. (2014). The relation between antisocial and borderline personality symptoms and early maladaptive schemas in a treatment seeking sample of male substance users. *Clinical Psychology and Psychotherapy, 21,* 341-351. doi:10.1002/cpp1843.

Shorey, R., C., Elmquist, J., Anderson, S., & Stuart, G. L. (2015a). Early maladaptive schemas in men seeking residential substance use treatment. *Personality and Individual Differences, 83,* 6-12. doi:10.1016/j.paid.2015.03.040.

Shorey, R., C., Elmquist, J., Anderson, S., & Stuart, G. L. (2015b). The relationship between early maladaptive schemas, depression and generalized anxiety among adults seeking residential treatment for substance use disorders. *Journal of Psychoactive drugs, 47*(3), 230-238. doi:10.1080/02791072.2015.1050133.

Shorey, R. C., Stuart, G. L., & Anderson, S. (2013). Early maladaptive schemas among young adult male substance abusers: A comparison with a non-clinical group. *Journal of Substance Use Treatment, 44,* 522-527. doi:10.1016/j.jsat.2012.12.001.

Shorey, R. C., Stuart, G. L., & Anderson, S. (2014). Differences in early maladaptive schemas between a sample of young adult female substance abusers and a non-clinical comparison group. *Clinical Psychology and Psychotherapy, 21,* 21-28. doi:10.1002/cpp.1803.

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2011). Reviewing studies with diverse designs: The development and evaluation of a new tool. *Journal of Evaluation in Clinical Practice*, *18*(4), 746-752. doi:0.1111/j.1365-2753.2011.01662.x.

Sookman, D., & Pinard, G. (1999). Integrative cognitive therapy for resistant obsessive-compulsive disorder: A focus on multiple schemas. *Cognitive and Behavioral Practice, 6, 351-362.* doi:10.1016/S1077-7229(99)80055-8

Stanley, J. L., Mogford, D. V., Lawrence, R. J., & Lawrie, S. M. (2016). Use of novel psychoactive substances by inpatients on general adult psychiatric wards. *BMJ Open, 6,* 1-7. doi:10.1136/bmjopen-2015-009430

Stuart, G. L., Moore, T. M., Kahler, C. W., & Ramsey, S.E. (2003). Substance abuse and relationship violence among men court-referred to batterers' intervention programs. *Substance Abuse, 24*(2)*,* 107-122. doi:10.1080/08897070309511539

Stuart, G. L., Moore, T. M., Ramsey, S. E., & Kahler, C. W. (2004). Hazardous drinking and relationship violence perpetration and victimization in women arrested for domestic violence. *Journal of Studies on Alcohol, 65,* 46-53. doi:10.15288/jsa.2004.65.46

Stuart, G. L., Temple, J. R., Follansbee, K., Bucossi, M. M., Hellmuth, J. C., & Moore, T. M. (2008). The role of drug use in a conceptual model of intimate partner violence in men and women arrested for domestic violence. *Psychology of Addictive Behaviors, 22,* 12-24. doi:10.1037/0893-164X.22.1.12

Taylor, C. D. J., Bee, P., & Haddock, G. (2017). Does schema therapy change schemas and symptoms? A systematic review across mental health disorders. *Psychology and Psychotherapy: Theory, Research and Practice, 90*(3), 456-479. doi:10.1111/papt.12112.

Taylor, C. D. J., & Harper, S. F. (2016). Early maladaptive schema, social functioning and distress in psychosis: a preliminary investigation. *Clinical Psychologist,* doi:10.1111/cp.12082

Waller, G., Kennerley, H., & Ohanian, V. (2007). Schema-focussed cognitive-behavioural therapy for eating disorders. In L. P Riso, P. L. du Toit, D. J Stein & J. E Young (Eds.), *Cognitive schemas and core beliefs in psychological problems: A scientist-practitioner guide* (pp.11-39). Washington DC: American Psychological Association.

World Health Organisation (WHO) ASSIST Working Group (2002). The alcohol, smoking

and substance involvement screening test (ASSIST): development, reliability and feasibility. *Addiction, 97,* 11-83-1194.

Young, J. E. (1990). *Cognitive therapy for personality disorders: A schema-focused approach.* Sarasota FL: Professional Resource Exchange.

Young, J. E. (1998). *The Young schema questionnaire: Short form.* Retrieved from http://www.schematherapy.com

Young, J. E. (2014) Early maladaptive schemas. In J. Young (2016). *Schema therapy inventories and related materials, Version 2.5.* New York: Schema Therapy Institute.

Young, J. E., & Brown, G. (2003). *Young schema questionnaire.* New York: Cognitive Therapy Center of New York.

Young, J. E., Klosko, J., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide.* New York, NY: Guilford Press.

Zimmerman, M. (2002). *The Psychiatric Diagnostic Screening Questionnaire: Manual.* Los Angeles: Western Psychological Services.

CHAPTER 2: EMPIRICAL PAPER

The Relationship Between Adult Romantic Attachment, Early Maladaptive Schemas and Alcohol Use in a Student Population

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Article prepared for submission to Journal of Abnormal Psychology for peer review. Please see Appendix B for the journal guidelines for authors.

Abstract

Previous research has identified a relationship between early maladaptive schemas (EMS) and substance dependence, but there is a dearth of research investigating EMS and alcohol use in non-clinical populations, despite alcohol being the most commonly misused substance in the UK population. The aim of this study was to explore if EMS mediate the relationship between adult insecure romantic attachment (attachment anxiety and attachment avoidance) and alcohol use in a student population. A cross-sectional study of 128 student participants were recruited through the University of Liverpool intranet and by poster advertisement. Participants completed self-report measures comprising of: Alcohol Use Disorders Identification Test (AUDIT), Leeds Dependence Questionnaire (LDQ), Drinking Motive Questionnaire-Revised Short Form (DMQ-R SF), Experiences in Close Relationships –Revised (ECR-R) and Young Schema Questionnaire Short Form, Third Version (YSQ-S3). Bias-corrected bootstrapping indicated that the EMS domain 'impaired limits' mediated the relationship between adult insecure romantic attachment (both attachment anxiety and attachment avoidance) and alcohol use. Furthermore 'impaired limits' and drinking to cope with depression and anxiety were serial mediators in the relationship between attachment avoidance and alcohol use, but not for attachment anxiety and alcohol use. This research highlights the relationship between EMS and avoidant coping strategies (attachment avoidance and drinking to cope) on drinking behaviour.

Key Words: Alcohol, student, schema, attachment, drinking motives.

Introduction

Alcohol misuse is a common problem in the UK. In a national survey (Office for National Statistics [ONS], 2013), approximately 18% of men and 13% of women were considered at 'increased risk' of alcohol-related harm (consuming 21-50 units per week for men, 14-35 units for women) and 5% of men and 3% of women drank at 'higher risk' levels (>50 units per week for men, >35 units per week for women). Furthermore, approximately 9% of men and 4% of women in the UK showed signs of alcohol dependence, yet only 6.4% of people who were alcohol-dependent accessed specialist treatment in the UK (Drummond et al., 2013).

Alcohol is considered to be one of the most harmful drugs in terms of both personal and societal harm (see, for example, Nutt, King, & Phillips, 2010). In 2014/2015 there were approximately 1.1million admissions due to an alcohol-related disorder (alcohol abuse or dependence), injury or condition (ONS, 2016), which had increased by 3% from the previous year. Alcohol misuse presents complex problems that often co-occur with other psychological difficulties (Lyne, O'Donoghue, Clancy, & O'Gara, 2011), as well as having medical, physical, social, and economic implications (National Institute for Health and Clinical Excellence [NICE], 2011). The annual cost of alcohol-related harm to the NHS in England is estimated to be £2.7 billion (Department of Health, 2008). The disparity between the prevalence of alcohol misuse and access to specialist treatment, and the cost of alcohol-related harm suggests that many people are not accessing effective treatment and preventative strategies could be improved.

While numerous factors such as family history of alcohol misuse (Brook et al., 2010), various socioeconomic factors (Collins, 2016) and early exposure to alcohol (Ferguson, Lynskey, & Horwood, 1994) have been associated with alcohol misuse, there is an argument that a lack of early attachment security and the development of maladaptive cognitive

processes can influence alcohol misuse. This literature review shall focus upon theory and research findings of some psychological variables (namely, attachment and schemas) that might influence the development of alcohol misuse.

Attachment theories suggest that through early attachment experiences between a child and their caregivers, the child develops expectations about the responsiveness of their caregivers and therefore a child's attachment style can be observed (Ainsworth, Blehar, Waters, & Wall, 1978). These expectations are cognitively represented in the child's mind and are referred to 'internal working models' (IWMs; Bowlby, 1969), which include a model of 'self' and 'other' (Bowlby, 1988) and serve as prototypes for subsequent secure or insecure attachment relationships. Bowlby argued that attachment is an important component of human experience "from the cradle to the grave" (Bowlby, 1979, p. 129). Specifically, Fraley and Shaver (2000) suggested that the individual differences observed in infant-caregiver relationships (Ainsworth et al., 1978) were similar to the ones observed in adult romantic relationships (Davis, Kirkpatrick, Levy, & O'Hearn, 1994). This suggests some continuity in individual attachment patterns over time, despite the importance of infant-caregiver relationship evolving to the importance of romantic attachment with age. This study shall focus on insecure romantic attachment, including attachment anxiety (model of 'self') and attachment avoidance (model of 'other'), (Bartholomew & Horowitz, 1991) which have been associated with psychopathology (Mikulincer & Shaver, 2012).

It has been proposed that IWMs are open to revision through changes in supportive attachment figures and the provision of a secure base (Mikulincer, Hirschberger, Nachmias, & Gillath, 2001). One factor that has been shown to contribute to stability of attachment style over time is the person's schemas (Platts, Tyson, & Mason, 2002). Schemas have been defined as a "theme or pattern comprised of memories, emotions, cognitions and bodily

sensations regarding oneself and one's relationship with others" (Young, Klosko, & Weishaar, 2003, p.7).

Early maladaptive schemas (EMS) are considered to develop through unfulfilled attachment needs during childhood, and fail to adapt in response to changing circumstances. The schemas that were appropriate as a child, can interfere with an individual's ability to function and form healthy adult relationships. EMS therefore serve as a template to process experiences throughout adulthood (Young et al., 2003) and are believed to be stable constructs that are resistant to change (Riso et al., 2006).

Current classifications of EMS suggest that there are 18 individual EMS under four key domains (Young, 2014); (1) the 'disconnection and rejection' domain comprises the individual EMS of emotional deprivation, mistrust/abuse, emotional inhibition, defectiveness/shame, and social isolation/alienation; (2) the 'impaired autonomy and performance' domain comprises the individual EMS of dependence/incompetence, abandonment/instability, vulnerability to harm or illness, enmeshment / undeveloped self, failure, and subjugation/invalidation; (3) the 'excessive responsibility and standards' domain comprises the EMS of self-sacrifice, and unrelenting standards/hypercriticalness; (4) the 'impaired limits' domain' comprises the EMS of entitlement/grandiosity, and insufficient self-control/self-discipline. The remaining three EMS are unclassified; these EMS are approval seeking / recognition-seeking, negativity/pessimism, and punitiveness.

Parallels can be drawn between EMS and IWMs of insecurely attached individuals. Both are cognitive and emotional structures that develop from early interactions with caregivers, and serve as templates for the processing of experiences involving the self and others throughout the lifespan (Young et al, 2003; Young & Lindemann, 1992). The links between insecure attachment and EMS have been demonstrated in various clinical populations (Platts, Tyson, & Mason, 2002), and secure attachment has been associated with

significantly lower scores on nine out of fifteen EMS measured, within a general mental health population (Mason, Platts, & Tyson, 2005). The schema domain of disconnection and rejection was found to mediate the relationship between insecure attachment and peer problems and emotional problems in an adolescent clinical population (Roelofs, Onckels, & Muris, 2013). However, the identified eighteen EMS across four domains are specific components of IWMs that might explain individual differences in attachment relationships, which can inform personalised intervention (Platts et al., 2002).

Previous research demonstrated that insecure attachment was associated with drinking frequency and coping motives in non-dependent heavy drinking student populations (Brennan & Shaver, 1995). Furthermore, insecure attachment styles have been shown to be risk factors for the development of alcohol dependence (Vungkhanching, Sher, Jackson, & Parra, 2004). Alcohol dependent individuals experience heightened anxiety (model of 'self') and mistrust in interpersonal relationships and avoid closeness and intimacy (model of 'other'), in comparison to non-dependent controls (Wyrzykowska, Glogowska, & Mickiewicz, 2014). While patterns of attachment have shown stability over time (Collins & Read, 1990; Sibley & Lui, 2004), some researchers have documented only moderate stability in attachment style and dimensions (Scharfe & Bartholomew, 1994; Kirkpatrick & Hazan, 1994), which suggests that insecure attachment can be modified through the subsequent relational experiences, including therapeutic interventions/relationships possibly that target individual EMS.

The presence of EMS within alcohol and substance use populations has received recent research interest. Brotchie, Meyer, Copello, Kidney, and Waller (2004) examined the EMS representations of three clinical groups (alcohol abuse, opiate abuse, and combined alcohol and opiate abuse group) with those of a non-clinical sample. Significant group differences were found for twelve out of fifteen EMS (not for failure, self-sacrifice or unrelenting standards) measured by the Young schema questionnaire short form (YSQ-S2;

Young, 1998). Some studies examined the correlations between EMS domains and alcohol use for people in treatment for substance abuse (alcohol and drugs); notably, in a mixed sample of males and females in treatment for substance use disorders, the only EMS domain that was correlated with alcohol use was impaired limits (Shorey, Elmquist, Anderson, & Stuart, 2015a). In a sample of males in treatment for substance misuse, the EMS domains of impaired autonomy and performance, and impaired limits were significantly associated with alcohol use (Shorey, Elmquist, Anderson, & Stuart, 2015b). Impaired limits, disconnection and rejection, and overvigilance and inhibition EMS domains were also positively associated with alcohol use in another mixed participant sample (Elmquist, Shorey, Anderson, & Stuart, 2016). However, some studies have reported that none of the EMS domains were significantly associated with alcohol use in clinical samples; one included a clinical sample of male and female substance users (Shorey, Anderson, & Stuart, 2013), another included a clinical sample of male substance abusers (Shorey, Anderson, & Stuart, 2014), and one utilised a small, non-clinical (n=30) sample (Aaron, 2013). These studies recruited mixed samples of substance users, rather than participants in treatment specifically for alcohol misuse, and further research is needed to understand the role of EMS in heavy-drinking clinical and non-clinical populations.

The presence of EMS and the potential to modify these in a specific alcohol-dependent population has been explored in only one study (Roper, Dickson, Tinwell, Booth, & McGuire, 2010). Patients reported significant reductions in 13 out of 15 EMS measured (not self-sacrifice or unrelenting standards) after medical and psychosocial detoxification for alcohol dependency. Furthermore, the scores of nine EMS did not differ significantly between alcohol dependent participants after their completed treatment, in comparison to the non-clinical comparison group. At post-treatment, the clinical group continued to have significantly higher scores for emotional deprivation, mistrust/abuse, defectiveness/shame,

dependence/incompetence, vulnerability to harm/illness, and subjugation. This suggests that significant reductions in some EMS in people with alcohol dependency can be achieved through brief residential treatment, although some EMS may be more resistant to change.

While EMS or attachment has been explored within alcohol dependent populations, no study to date has explored both insecure attachment and EMS and their association with alcohol use in a non-dependent heavy drinking population. This is important for understanding risk predictors of alcohol misuse.

The drinking patterns of young adults transitioning into further and higher education is of particular importance, as this is a time when students form new relationships; the importance of attachment to parents/caregivers shifts to attachment to friends and romantic partners, and their alcohol consumption concurrently increases (White et al., 2006; Scheier, Botvin, & Baker, 1997). Borsari, Murphy, and Barnett (2007) identified several mediators explaining the relationship between college and first year alcohol use. These included drinking motives (Kuntsche & Kuntsche, 2009), particularly coping with unpleasant emotions (O'Connor & Colder, 2005), drinking to relax or for social assertiveness (Kushner, Sher, Wood, & Wood, 1994), to 'belong' or to 'fit in' (Johnson, Rodger, Harris, Edmunds, & Wakabayashi, 2005) and perceived norms (Hartzler & Fromme, 2003).

It seems possible that the relationship between attachment experiences and EMS might inform drinking motives (to cope with EMS and unpleasant emotions) and alcohol consumption. Furthermore, as adults have shown consistent drinking habits over time (Moore et al., 2005), the drinking patterns of young adults, particularly students, are important since this is when alcohol consumption increases and drinking patterns may be established.

In summary, research has suggested that alcohol misuse is associated with attachment insecurity and EMS, and that insecure attachment and EMS and are linked. To the author's

knowledge, no study to date has investigated these three variables together. There is also a dearth of research in the area of drinking habits in non-clinical populations.

Aims of The Current Study

We aimed to identify the relationship between insecure romantic attachment (attachment anxiety and avoidance) and EMS that might precipitate alcohol misuse within an adult student population.

Hypotheses

We predicted that EMS domains would mediate the relationship between insecure romantic attachment (attachment anxiety and attachment avoidance) and alcohol use. We also wanted to explore the potential role of drinking motives upon alcohol consumption and so we examined serial multiple mediation. We examined the potential mediating effects of EMS domains and drinking to cope with unpleasant emotions, between insecure romantic attachment (attachment anxiety and avoidance) and alcohol use.

Method

Participants

Data was collected between February 2017 until September 2017. Participants were eligible to take part if they were students at the University of Liverpool and were aged at least 18 years old. Participants were not eligible to take part if they were under 18 years old, if they considered themselves to be abstinent from alcohol and if they had ever experienced or were experiencing drug or alcohol abuse or had / were having treatment for these.

Sample Size

A moderate to small association was assumed between attachment and schemas; although significant associations between attachment and schemas in general clinical samples have been found (Mason, Platts, & Tyson, 2005), this had not previously been investigated in relation to alcohol use in a non-clinical sample. A strong association between schemas and

alcohol misuse was expected (Brotchie et al., 2004). In order to conduct bias-corrected bootstrapping of indirect effects upon these criteria, a sample size of approximately 120 was required based on the recommendations provided by Fritz and MacKinnon (2007).

Design

A cross sectional correlational design was employed for a non-clinical student sample.

Measures

Demographic information. Participants were asked to identify their gender, age, ethnicity, religion, relationship status, the first part of their postcode and their employment status. Participants were also asked to identify their year of study and the total number of years studying at the University of Liverpool (see Appendix D)

Alcohol Use Disorders Identification Test (AUDIT). The AUDIT (Appendix E) was developed by the World Health Organisation to identify people who have an alcohol use disorder (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). This self-report measure consists of ten questions on a 5-point (0-4) scale measuring volume and frequency of alcohol consumption, dependence symptoms and harmful alcohol use in the past twelve months. Total scores of 8 or more indicate hazardous and harmful alcohol use (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). Correlational analyses between AUDIT scores and severity of dependence have demonstrated its validity for assessing severity of alcohol dependence in a treatment-seeking population (Donovan, Kivlahan, Doyle, Longabaugh, & Greenfield, 2006). It has demonstrated high test-retest reliability (Thomas & McCambridge, 2008) and high internal consistency within a systematic review (de Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009). The authors of the review concluded that the AUDIT is an efficient, reliable and valid measurement in screening harmful use, misuse, and addiction to alcohol, suggested within NICE (2011) guidelines. In the current sample, internal consistency for total scale scores was α=.79.

Leeds Dependence Questionnaire (LDQ). The LDQ (Raistrick, et al, 1994) is a ten-item questionnaire (Appendix F) designed to measure the severity of alcohol dependence over the previous four weeks. Responses are on a 3-point likert scale (1='never'; 3='almost always'). The LDQ demonstrated high internal consistency (α=.93) within a clinical sample of adults with alcohol or substance dependence (Kelly, Magill, Slaymaker, & Kahler, 2010) and high test-retest reliability (0.95) in a variety of populations (Raistrick et al, 1994). The LDQ has been reported to have acceptable concurrent validity when compared to the Severity of Alcohol Dependence Questionnaire (R=0.69, p<0.0001; NICE, 2011) and is considered to be an acceptable diagnostic measure of severity of alcohol dependence, documented in NICE guidance (NICE, 2011). In the current sample, internal consistency was α=.80.

Drinking Motive Questionnaire Revised Short Form (DMQ-R SF). The DMQ-R SF (Appendix G) consists of 12 items measuring four subscales: social, enhancement, conformity, and coping motives (Kuntsche & Kuntsche, 2009). Individuals are asked to estimate the relative frequency of their alcohol use for each of the 12 indicated reasons on a 1 to 3 likert scale (1='never'; 3='almost always'). The measure has shown adequate internal consistency (alpha values for all subscales ≥0.7) and concurrent validity (Kuntsche & Kuntsche, 2009), which demonstrate that the DMQ-SF has similar psychometric properties to the DMQ-R (Cooper, Russell, Skinner, & Windle, 1992), with the advantage of increased efficiency. In the current sample, internal consistency for total scale scores was α=.81 and ranged from α=.67 to .85 for subscale scores.

The Experiences in Close Relationships (ECR-R) The ECR-R (Fraley, Waller, & Brennan, 2000) is a 36-item questionnaire (Appendix H), which measures romantic attachment across two dimensions: attachment anxiety (model of 'self') and attachment avoidance (model of 'others'). Item responses are on a 7-point likert scale (1='strongly disagree; 7='strongly agree'). The ECR-R is a revision of the original Experiences in Close

Relationships questionnaire (ECR; Brennan, Clark, & Shaver, 1998) in an attempt to improve the item response metrics of the scale. The ECR and ECR-R both demonstrated excellent validity and reliability (α coefficients near or above .90; Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). Test-retest coefficients were between .50 and .75 (Ravitz et al, 2010). In the current sample, internal consistency for total scale scores was α=.70; the subscales of attachment anxiety and attachment avoidance were α=.88 and .41 respectively.

Young Schema Questionnaire – Short Form, Third Version (YSQ-S3). The long and short forms of the YSQ have been revised several times based on clinical observation and validation studies. The current short form is now in its third version (Young, 2003). The YSQ-S3 is a 90-item questionnaire (Appendix I) measuring 18 subscales of EMS across 4 schema domains. Respondents are asked to rate how much they believe each statement is true of them on a 1 to 6 point likert scale. The previous long form and short form had comparable psychometric properties (Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002) demonstrating adequate test-retest reliability and internal consistency, as well as convergent and discriminant validity. The psychometric properties of the YSQ-S2 (a 75-item questionnaire measuring 15 schemas) were demonstrated in an alcohol dependent clinical group and a non-clinical group (all αs >.88) (Roper et al; 2010). New to the YSQ-S3 are the negativity/ pessimism, approval seeking/recognition seeking, and punitiveness EMS. The short form was preferred due to its efficiency and only the third version was available; previous versions were considered out-dated and were no longer available from the publishers. In the current sample, internal consistency for total scale scores was α=.96 and ranged from α=.71 to .91 for individual EMS subscale scores.

Procedure

Two experts by experience (who had prior treatment for alcohol dependency) were consulted regarding the design of the study. Their feedback was that the questionnaires were

emotive; this provided a rationale for the primary researcher to meet face-to-face with participants to protect participants from harm and ensure they understood their ethical rights. Ethical approval was granted from the University of Liverpool Health and Life Sciences Committee on Research Ethics (Appendix J). Poster advertisements (see Appendix K) were distributed within buildings across the University campus. The study was also advertised on the digital announcements of the University homepage and the experiment participation requirement (EPR) scheme for undergraduate psychology students.

In response to the advertisement, potential participants were invited to email the student researcher to express their interest in participating in the research. The student researcher replied with further information about the study, attaching the participant information sheet (Appendix L) and offered a face-to-face meeting on the University campus in a group of participants to administer the questionnaires.

Before completing the study, participants gave their informed consent and completed a consent form (Appendix M). Participants were thanked, received a debriefing sheet (Appendix N) and were allowed to ask questions. All participants were provided with information should they become distressed. This included advice regarding contacting their G.P., the Primary Supervisor and the 'Drink Aware' service as well as contact details of the University counselling service.

Each participant received a £5 high street voucher for taking part in the research. The student researcher gave the voucher immediately after completion of the questionnaires. The vouchers did not promote the use of drugs or alcohol, in accordance with the ethics guidance from the Health Research Authority (HRA, 2014). As part of the experimental participation requirement (EPR) system, credits were given to first year undergraduate psychology students. Participants were asked to provide their email address should they want to know the results of the study.

Statistical Analyses

Descriptive and correlational analyses were carried out using SPSS v. 24 (IBM Corporation, Armonk, NY, USA). Hypothesised indirect effects were analysed using PROCESS (Hayes, 2012). Firstly, a multiple mediation analysis was conducted. The independent variables were attachment anxiety (IV1) and attachment avoidance (IV2), the dependent variable (DV) was alcohol use as measured by AUDIT scores. The mediators were the schema domains – disconnection and rejection (M1), impaired autonomy and performance (M2), excessive responsibility and standards (M3), and impaired limits (M4). Secondly, a serial multiple mediation analysis was conducted; likewise, the independent variables were attachment anxiety and attachment avoidance, the dependent variable (DV) was alcohol use as measured by AUDIT scores. The mediators were impaired limits schema domain (M1) and drinking to cope strategies (M2).

Results

In total, 128 participants completed the study, including 93 females (72.7%) and 35 males (27.3%). Participants' age ranged from 18 to 53 years old (M=27.66, SD=5.92). The majority of participants identified themselves as White British (n=86, 67.2%), postgraduate students (n=103, 81%), and in a relationship defined as committed, married or civil partnership (n=84, 65.6%). Further participant characteristics are shown in Appendix O. Participants' alcohol consumption ranged from 0 to 80 units in the week prior to testing (M=13.28, SD=12.82), with males consuming more units of alcohol (M=16.92, SD=18.71) than females (M=11.89, SD=9.47).

Descriptive statistics for the key study variables are shown in Table 3. As shown in Table 3, AUDIT scores were indicative of more hazardous drinking in males than females. AUDIT scores from the total sample indicated hazardous and harmful alcohol use, as well as possible alcohol dependence in the sample.

Tables 4 and 5 show descriptive statistics for individual schemas and schema domains, respectively. A multivariate analysis of variance (MANOVA) was performed to test whether there were significant differences between males and females for the key study variables, including individual schemas and schema domains. This revealed that there was an overall difference between males and females on the entitlement schema score, $F(1,126)=15.26$, $p<.001$, $\eta_p^2=.11$ but on no other subscale.

Multiple mediation analyses were performed to explore the direct and indirect effects of attachment anxiety and attachment avoidance as independent variables (IV) on alcohol use as measured by AUDIT scores as the dependent variable (DV), with schema domains as mediators. These associations are represented in Figure 2.

Table 3

Descriptive Statistics for the Key Study Variables for Males and Females

	Male	Female	Total
Variable	*M (±SD)*	*M (±SD)*	*M (±SD)*
AUDIT	10.60 (6.69)	7.87 (5.10)	8.62 (5.69)
LDQ	4.46 (4.02)	2.40 (2.45)	2.96 (3.09)
DMQ-R SF Social	5.34 (1.14)	5.23 (1.34)	5.26 (1.28)
DMQ-R SF Coping	5.74 (1.09)	5.66 (1.21)	5.68 (1.18)
DMQ-R SF Enhancement	5.40 (1.19)	5.69 (1.39)	5.59 (1.34)
DMQ-R SF Conformity	5.46 (1.40)	5.19 (1.21)	5.27 (1.26)
ECR-R Attachment Anxiety	51.63 (21.13)	49.05 (22.42)	49.76 (22.02)
ECR-R Attachment Avoidance	58.51 (23.17)	53.70 (20.03)	55.02 (20.95)

Note. AUDIT = Alcohol Use Disorders Identification Test; LDQ = Leeds Dependence Questionnaire; DMQ-R SF = Drinking Motive Questionnaire Revised Short Form; ECR-R = Experiences in Close Relationships Questionnaire.

Table 4

Total Scores for Individual Schemas on the YSQ-S3 for Males and Females

	Male	Female	Total
Individual Schema Description	*M (±SD)*	*M (±SD)*	*M (±SD)*
1. Emotional Deprivation	9.29 (4.49)	8.92 (4.73)	9.02 (4.65)
2. Mistrust / Abuse	13.03 (5.30)	11.16 (5.08)	11.67 (5.19)
3. Emotional Inhibition	14.23 (5.48)	11.69 (4.45)	12.38 (4.87)
4. Defectiveness / Shame	8.89 (3.26)	9.38 (5.06)	9.24 (4.63)
5. Social Isolation	12.09 (4.21)	11.61 (5.53)	11.74 (5.19)
6. Dependence / Incompetence	10.63 (4.72)	10.13 (4.42)	10.27 (4.49)
7. Abandonment / Instability	11.71 (5.75)	10.70 (6.09)	10.98 (6.00)
8. Vulnerability to Harm or Illness	11.43 (5.42)	10.71 (5.33)	10.91 (5.35)
9. Enmeshment / Undeveloped Self	6.94 (2.65)	7.98 (3.46)	7.70 (3.28)
10. Failure	12.06 (5.70)	11.99 (5.84)	12.01 (5.78)
11. Subjugation / Invalidation	11.49 (5.28)	10.30 (4.54)	10.63 (4.76)
12. Self-Sacrifice	15.37 (4.12)	16.65 (5.39)	16.30 (5.09)
13. Unrelenting Standards	19.37 (4.91)	19.19 (5.13)	19.24 (5.05)
14. Entitlement / Grandiosity	15.00 (5.12)	11.65 (4.00)*	12.56 (4.57)
15. Insufficient Self-Control	13.31 (5.57)	12.18 (4.50)	12.49 (4.82)
16. Approval-Seeking	14. 80 (5.33)	14.14 (4.99)	14.32 (5.07)
17. Negativity / Pessimism	13.97 (5.06)	13.02 (6.38)	13.28 (6.04)
18. Punitiveness	13.71 (4.61)	13.27 (5.19)	13.39 (5.02)

* Significant differences were found between males and females on the 'entitlement' schema scores, $p<.001$ only

Table 5

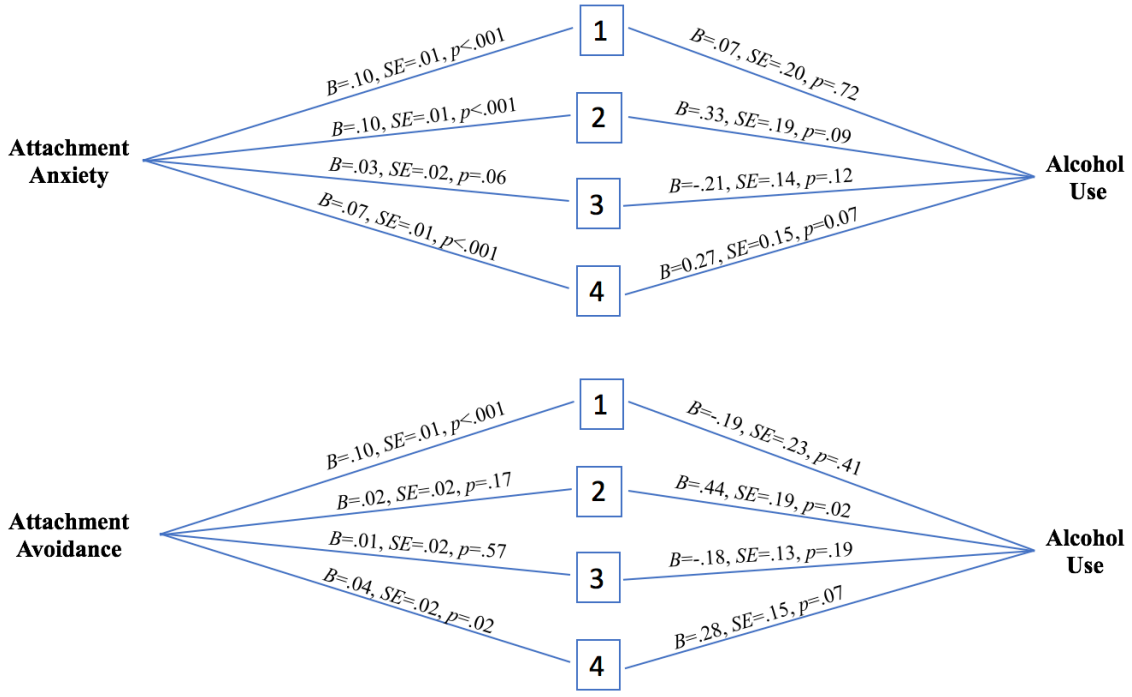
Mean Scores for Schema Domains on the YSQ-S3 for Males and Females[3]

	Male	Female	Total
Schema Domain	*M (±SD)*	*M (±SD)*	*M (±SD)*
1. Disconnection and Rejection	11.50 (3.36)	10.55 (3.77)	10.81 (3.68)
2. Impaired Autonomy and Performance	10.71 (3.45)	10.30 (3.82)	10.41 (3.71)
3. Excessive Responsibility and Standards	17.37 (3.33)	17.92 (4.31)	17.77 (4.06)
4. Impaired Limits	14.16 (4.41)	11.91 (3.45)	12.53 (3.85)

[3] Individual EMS in Table 4 form the EMS domains in Table 5. The 'Disconnection and Rejection' domain comprises the individual EMS numbered 1-5; 'Impaired Autonomy and Performance' comprises EMS 6-11; 'Excessive Responsibility and Standards' comprises EMS 12 & 13; 'Impaired Limits' comprises EMS 14 & 15; EMS 16-18 are unclassified.

Effect of Attachment Anxiety on Schema Domains

As hypothesised, attachment anxiety significantly predicted the schema domains of disconnection and rejection (unstandardized regression coefficient, *B*=.10, *SE*=.01, *p*<.001, 95% CI =.08 to .12), impaired autonomy and performance (*B*=.10, *SE*=.01, *p*<.001, 95 % CI=.07 to .12) and impaired limits (*B*=.07, *SE*=.01, p>.001, 95 % CI=.04 to .10). There was a trend towards attachment anxiety predicting the schema domain of excessive responsibility and standards, although this was not statistically significant (*B*=.03, *SE*=.02, *p*=.06, 95 % CI= -.001 to .063).



Note. 1=disconnection and rejection, 2=impaired autonomy and performance, 3=excessive responsibility and standards, 4=impaired limits.

Figure 2. Multiple mediation analyses with attachment anxiety and attachment avoidance as the independent variables (IV), alcohol use[4] as the dependent variable (DV) and schema domains as mediators.

[4] The dependent variable - problematic alcohol use was measured by using the AUDIT. The AUDIT is significantly correlated with the LDQ (Lennings, 1999)

Effect of Attachment Avoidance on Schema Domains

Attachment avoidance predicted disconnection and rejection (*B*=.10, *SE*=.01, *p*<.001, 95 % CI=.07 to .12), and impaired limits (*B*=.04, *SE*=.02, *p*=.02, 95% CI=.01 to .07); however, attachment avoidance did not predict impaired autonomy and avoidance (*B*=.02, *SE*=.02, *p*<=.17, 95% CI=-.01 to .05), nor excessive responsibility and standards (*B*=.01, *SE*=.02, *p*=.57, 95% CI=.02 to .04).

Effect of Schema Domains on Alcohol Use

The impaired autonomy and performance schema domain predicted alcohol use when the independent variable was attachment avoidance (*B*=.44, *SE*=.19, *p*=.02, 95% CI=.07 to .81). No other schema domains predicted alcohol use. See Figure 2 for inferential statistics.

Direct and Indirect Effects

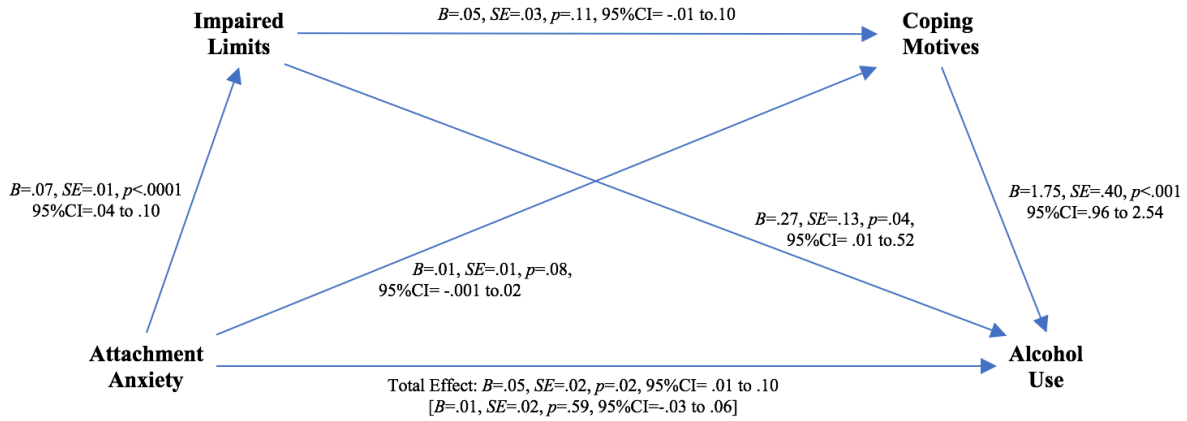
The direct effect of attachment anxiety on AUDIT scores was not significant (bias corrected bootstrapping effect =0.00, *SE*=.03, *p*=1.00, 95% CI=-.06 to .06). Critically, there was a significant indirect effect of attachment anxiety on alcohol use through the schema domain of impaired limits (*B*=.02, *SE*=.01, 95% CI=.001 to .041). No other schema domains were found to be mediators.

The direct effect of attachment avoidance on AUDIT scores was not significant either (*B*=.05, *SE*=.03, *p*=.07, 95% CI=-.004 to .113). The schema domain impaired limits was the mediator in the indirect association between attachment avoidance and AUDIT scores (*B*=.01, *SE*=.01, 95% CI=.001 to .028). No other schema domains were found to be mediators.

Effect of Attachment Anxiety on Alcohol Use via Impaired Limits Schema Domain and Drinking to Cope with Depression or Anxiety Strategies

To further test the indirect effects of impaired limits (which were significant in the relationship between both attachment anxiety / attachment avoidance and alcohol use), the

combined effects of impaired limits schema domain and drinking to cope motives was examined through a serial multiple mediation analysis. The effects are shown in Figures 3 and 4.



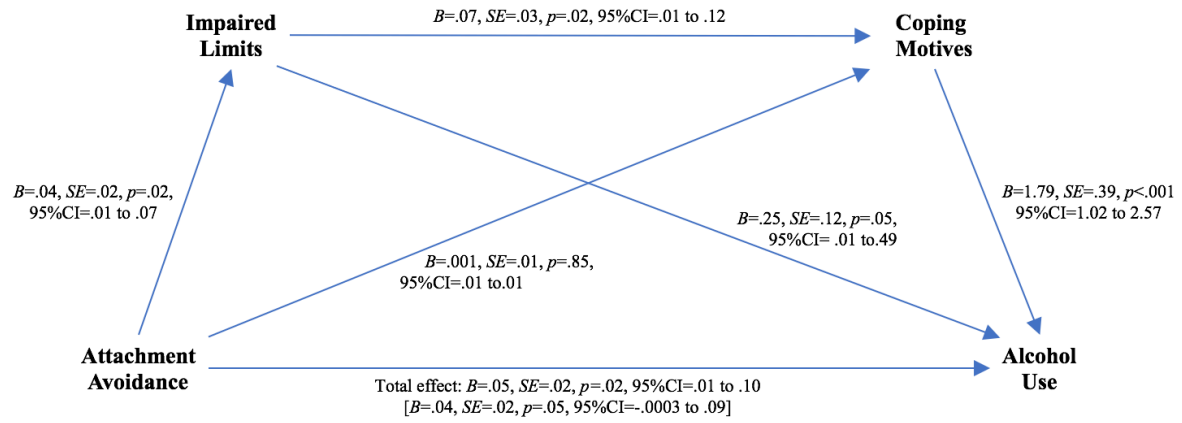
Note. Bracketed association = direct effect (controlling for indirect effects).

Figure 3. Serial multiple mediation analysis with attachment anxiety as the independent variable (IV), alcohol use as the dependent variable (DV), the impaired limits schema domain and drinking to cope strategies as first and second mediators, respectively.

The serial multiple mediation model indicated a significant total effect of attachment anxiety on alcohol use (*B*=.05, *SE*=.02), *p*=.02, 95% CI=.01 to .10. As previously stated, the direct effects of attachment anxiety on alcohol use was not significant (*B*=.01, *SE*=.02, *p*=.59, 95% CI=-.03 to .06). With regard to indirect pathways, the total indirect effects of attachment anxiety on alcohol use was significant (*B*=.04, *SE*=.01, 95% CI=.02 to .07). Further analysis of the indirect pathways found a significant indirect effect of attachment anxiety on alcohol use via drinking to cope (*B*=.02, *SE*=.01, 95% CI=.001 to .038). The indirect effects of attachment anxiety on alcohol use via impaired limits and drinking to cope motives operating in series was not significant (*B*=.01, *SE*=.004, 95% CI=-.0004 to .0169).

Effect of Attachment Avoidance on Alcohol Use via Impaired Limits Schema Domain and Drinking to Cope with Depression or Anxiety Strategies

The same analysis was repeated but using attachment avoidance as the IV.



Note. Bracketed association = direct effect (controlling for indirect effects).

Figure 4. Serial multiple mediation analysis with attachment avoidance as the (IV), alcohol use as the DV, the impaired limits schema domain and drinking to cope strategies as first and second mediators, respectively.

The serial multiple mediation model indicated a significant total effect of attachment avoidance on alcohol use (*B*=.05, *SE*=.02, *p*=.02, 95% CI=.01 to .10). The direct effects of attachment avoidance on alcohol use was not significant (*B*=.04, *SE*=.02, *p*=.05, 95% CI=-.0003 to .0861). With regard to indirect pathways, the total indirect effects of attachment avoidance on alcohol use was not significant (*B*=.01, *SE*=.01, 95% CI=-.01 to .03). The indirect effects of attachment avoidance on alcohol use via drinking to cope with depression or anxiety motives was not significant (*B*=.00, *SE*=.01, 95% CI= -.02 to .02); however, the serial indirect effects of attachment avoidance on alcohol use via impaired limits and drinking to cope motives operating in series was significant (*B*=.004, *SE*=.003, 95% CI=.001 to .012).

Discussion

The aim of the current study was to investigate the relationship between adult romantic attachment, EMS, and alcohol use in a student population. The results showed that attachment anxiety was significantly positively associated with EMS domains of disconnection and rejection, impaired autonomy and performance, and impaired limits, but not excessive responsibility and standards. None of the schema domains predicted alcohol use when the independent variable was attachment anxiety and there was no significant direct effect between attachment anxiety and alcohol use; however, there was a significant indirect effect of attachment anxiety on alcohol use through impaired limits. No other schema domains were found to be mediators between attachment anxiety and alcohol use.

Attachment avoidance was significantly positively associated with EMS domains of disconnection and rejection and impaired limits, but not impaired autonomy and performance, or excessive responsibility and standards. Impaired autonomy and performance was significantly positively associated with alcohol use when the independent variable was attachment avoidance, but disconnection and rejection, excessive responsibility and standards, and impaired limits did not predict alcohol use when the independent variable was attachment avoidance. There was no significant direct effect of attachment avoidance on alcohol use; however, there was a significant indirect effect of attachment avoidance on alcohol use through impaired limits. No other schema domains were found to be mediators between attachment avoidance and alcohol use.

These findings emphasise the important mediating effects of the impaired limits schema domain in predicting the relationship between adult romantic attachment (both attachment anxiety and attachment avoidance) and alcohol use when no significant direct effects were found. Additionally, there was a serial indirect effect of attachment avoidance on alcohol use through impaired limits and coping motives, but the serial indirect effects were

not significant between attachment anxiety and alcohol use. Significant direct effects between independent variables and dependent variables are not necessary for mediation (Loeys, Moerkerke, & Vansteelandt, 2014). Indeed, Rucker, Preacher, Tormala, and Petty (2011) argue that attention of direct effects should be shifted towards indirect effects in mediation.

EMS predicting drinking behaviour is consistent with previous research (Brotchie et al., 2004). In particular, the importance of the impaired limits EMS domain was previously found in relation to alcohol use (Shorey et al., 2015a, 2015b; Elmquist et al., 2016), but other studies found no significant relationship between any EMS domains and alcohol use in clinical samples (Shorey et al., 2013; Shorey et al., 2014) or in a non-clinical small-scale sample (Aaron, 2013). The results from the current research better explains the indirect role of impaired limits in mediating the relationship between attachment and alcohol use and might explain the mixed findings from previous research, which only measured the direct effects of EMS and alcohol use, whereby no measures of attachment were utilised.

Attachment anxiety and attachment avoidance was found to be significantly higher in people who were alcohol-dependent in comparison to controls (Wyrzykowska et al., 2014); attachment insecurity was associated with drinking frequency in heavy-drinking student populations (Brennan & Shaver, 1995), and attachment insecurity has been associated with alcohol dependence (Vungkhanching et al., 2004). Surprisingly, there were no direct effects of either attachment anxiety (model of 'self') or attachment avoidance (model of 'other') and alcohol use in the sample in this study. However, the participants recruited were not selected on the basis of heavy drinking. It is possible that a direct effect of these variables might be found with participants that consume higher amounts of alcohol, similar to the results reported by Brennan and Shaver (1995). Nonetheless, the findings from this research suggest specific indirect effects of attachment and alcohol use in a student sample that present with wide-ranging drinking behaviours.

Notably, increases in alcohol consumption have been demonstrated in young adult students during times of transition and where attachment insecurities might be activated (White et al., 2006; Sheier, Botvin, & Baker, 1997), and students might drink to cope with unpleasant emotions to manage distress (O'Connor & Colder, 2005; Kuntsche & Kuntsche, 2009). The findings in the present study support previous research and highlight the risk that avoidant coping mechanisms such as drinking to cope and attachment avoidance are associated with problematic alcohol use. Further research might establish whether impaired limits and avoidant coping mechanisms predict mental health problems associated with alcohol use that has been found elsewhere (Roper et al., 2010; Lyne et al, 2011).

Strengths and Limitations of this Study

The mediational model was developed based on theoretical knowledge and previous research, however the cross-sectional design of this study means that is not possible to infer the direction of the effects (Maxwell & Cole, 2007). Additionally, the study included a non-clinical student sample, therefore limiting the generalisability of results to a clinical population or the general population. Despite attempts to include a range of age groups in the sample, the mean age was quite high as post-graduate students were over-represented. This might be because some of the recruitment occurred over summer months, a time when undergraduates were likely to be away from campus. Theoretically, the recruitment of first year undergraduates (a pivotal time of transition) might suggest stronger associations between attachment and alcohol use, which was previously demonstrated in a student sample in the USA (White et al., 2006). Participants' demographics were mainly female students of White British ethnicity. The ethnicity is similar to other research carried out in this area, however, problematic alcohol use is more common in clinical and non-clinical samples of males than females (ONS, 2013, 2016).

The self-report questionnaires were selected on the basis of their reliability and efficiency of measuring the key study variables, which were documented in previous research. Overall, the internal consistency of the variables within the current sample was good, with the exception of the attachment avoidance subscale of the ECR-R, which was low. As attachment avoidance was a key study variable, this represents a limitation for the study findings. Furthermore, as the classification and measurement of EMS and their domains has been modified in recent years, caution should be made when comparing the results from the present study with previous studies that have used previous measurements.

Additionally, the use of self-report measures might not be reliable measures of drinking behaviours, as people might under-report their alcohol consumption (Boniface & Shelton, 2013). The use of online methods for self-report measures might ensure complete anonymity, and hence provide more reliable results; however, no significant differences were found between web-based methods and paper-based methods of measures of alcohol use in previous research (Miller et al., 2002). A strength of meeting participants face-to-face was that the researcher was present to protect participants from potential harm and this was informed through service-user consultation. Future research could aim to develop measures of adaptive/helpful schemas to better understand factors which explain attachment security and protect against problematic alcohol use, which potentially, could be less emotive/distressing for participants and patients.

Practical Implications

Identifying the risk of avoidant coping (including attachment avoidance and drinking to cope with unpleasant emotions) and impaired limits on drinking behaviour has important implications. It highlights the necessity to screen for EMS and avoidant coping when assessing individuals for psychological interventions (e.g. for substance misuse, anxiety and depression). In addition, it is important that individuals with EMS, particularly within the

impaired limits domain, are informed of the role unhelpful avoidant coping strategies might have upon their drinking behaviours and the associated physical and psychological health consequences, and are supported in developing more adaptive/helpful coping strategies. Improving outcomes for students with problematic alcohol use could involve the improvement of attachment relationships with modification of underlying EMS (Roelofs et al., 2013). This can be encouraged through the use of social media, social events and support from university staff such as personal tutors, mentors, buddy systems and counselling services.

These findings provide preliminary support for the utility of therapies that address schema-level representations to people who misuse alcohol. Where the presence of EMS have been identified, therapeutic interventions should aim to reduce and modify these. Theoretically, schema therapy suggests that the therapeutic relationship can repair previous attachment experiences and offer containment through the therapist's role of limited re-parenting, which can help to reduce EMS, and in turn, improve clinical outcomes (Young et al., 2003); however, there is a dearth of research investigating the specific change mechanisms of schema therapy, particularly in the area of alcohol misuse (Taylor, Bee, & Haddock, 2017). Further research would be helpful in identifying change mechanisms, for example, through moderation analyses. Future research could employ longitudinal designs to measure the impact of EMS and drinking to cope over time, and how these can be modified through treatment. Again, this is an area that is under-researched, particularly within the UK.

Conclusion

The current study investigated the relationship between adult romantic attachment and alcohol use through EMS domains and drinking to cope motives in a student population. The research supported previous findings that impaired limits had an important role in problematic alcohol use. The results added to existing research in finding that the impaired

limits EMS domain mediated the relationship between adult insecure romantic attachment (both attachment anxiety and attachment avoidance), and that impaired limits and drinking to cope with depression and anxiety were serial mediators in the relationship between attachment avoidance and alcohol use, but not for attachment anxiety and alcohol use. This might explain the mixed findings from previous studies. The present research highlights the relationship between EMS and avoidant coping strategies (attachment avoidance and drinking to cope) on drinking behaviour. Due to the trans-diagnostic and co-morbid nature of EMS and drinking behaviour, it seems important for clinicians to be aware of how to identify EMS and maladaptive coping strategies and how these variables are associated with alcohol misuse and mental health difficulties.

References

Aaron, D. J. (2013). Early maladaptive schemas and substance use: implications for assessment and treatment. *Addictive Disorders and their Treatment, 12*(4), 193-200. doi:10.1097/ADT.0b013e31827d8763

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.

Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). The Alcohol Use Disorders Identification Test: Guidelines for use in primary care. World Health Organisation. Retrieved from: http://who.int/iris/handle/10665/67205.

Bartholomew, K., & Horowitz, L. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*(2)*,* 226-244. Retrieved from https://www.ncbi.nlm.nih.gov/m/pubmed/1920064/

Boniface, S., & Shelton, N. (2013). How is alcohol consumption affected if we account for under-reporting? A hypothetical scenario. *European Journal of Public Health*, 23(6) 1076–1081. doi:10.1093/eurpub/ck016

Borsari, B., Murphy, J. G., & Barnett, N. P. (2007). Predictors of alcohol use during the first year of college: Implications for prevention. *Addictive Behaviours, 32*(10), 2062-2086. doi:10.1016%2Fj.addbeh.2007.01.017

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment.* New York: Basic Books.

Bowlby, J. (1979). *The making and breaking of affectional bonds.* London: Tavistock.

Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory.* London: Routledge.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult romantic attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46-76). New York: Guilford

Press.

Brennan, K. A., & Shaver, P. R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality & Social Psychology Bulletin, 21*, 267−283. doi.10.1177/0146167295213008

Brook, J. S., Balka, E. B., Crossman, A. M., Dermatis, H., Galanter, M. & Brook, D. W. (2010). The relationship between parental alcohol use, early and late adolescent alcohol use, and young adult psychological symptoms: A longitudinal study *American Journal on Addictions, 19*(6), 534-542. doi:10.1111/j.1521-0391.2010.00083.x

Brotchie, J., Meyer, C., Copello, A., Kidney, R., & Waller, G. (2004). Cognitive representations in alcohol and opiate abuse: the role of core beliefs. *British Journal of Clinical Psychology, 43,* 337-342. doi:10.1348/0144665031752916

Collins, S. E. (2016). Associations between socioeconomic factors and alcohol outcomes. *Alcohol Research, 38*(1), 83-94. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4872618/

Collins, N., & Read, L. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*(4), 644-663. doi: 10.1037/0022-3514.58.4.644

Cooper, M. L., Russell, M., Skinner, J. B., & Windle, M. (1992). Development and validation of a three-dimensional measure of drinking motives. *Psychological Assessment, 4,* 123-132. doi:10.1037/1040-3590.4.2.123

Davis, K. E., Kirkpatrick, L. A., Levy, M. B., & O'Hearn, R. (1994). Stalking the elusive love style: Attachment styles, love styles, and relationship development. In R. Erber & R. Gilmour (Eds.), *Theoretical frameworks for close relationships* (pp. 179-210). Hillsdale, NJ: Erlbaum.

Department of Health (2008). *The Cost of Alcohol Harm to the NHS in England*. London: Department of Health.

Donovan, D. M., Kivlahan, D. R., Doyle, S. R., Longabaugh, R., & Greenfield, S. F. (2006). Concurrent validity of the Alcohol Use Disorders Identification Test (AUDIT) and AUDIT zones in defining levels of severity among out-patients with alcohol dependence in the COMBINE study. *Addiction, 101*, 1696–1704. doi: 10.1111/j.1360-0443.2006.01606.x

Drummond, C., Wolstenholme, A., Deluca, P., Davey, Z., Donoghue, K., Elzerbi, C.,…Kaner, E. (2013). Chapter 9: Alcohol interventions and treatments in Europe. In P. Anderson, F. Braddick, J. Reynolds & A Gual. (Eds.), *Alcohol policy in Europe: Evidence from AMPHORA* (pp. 71-101. Retrieved from: http://amphoraproject.net/w2box/data/e-book/AM_E-BOOK_2nd%20edition%20-%20final%20Sept%202013_c.pdf

Elmquist, J., Shorey, R. C., Anderson, S. E., & Stuart, G. L. (2016). A preliminary investigation of the relationship between early maladaptive schemas and compulsive sexual behaviors in a substance-dependent population. *Journal of Substance Use, 21*(4), 349-354. doi:10.3109/14659891.2015.1029021.

Ferguson, D. M., Lynskey, M. T. & Horwood, L. J. (1994). Childhood exposure to alcohol and adolescent drinking patterns. *Addiction, 89*(8), 1007-1016. doi:10.1111/j.1360-0443.1994.tb03360.x

Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment. Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology, 4*(2), 132-154. doi:10.1037//1089-2680.4.2.132

Fraley, R.C., Waller, N.G., & Brennan, K.A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personal and Social Psychology, 78*(2)*,* 350-365. doi:10.1037//0022-3514.78. 2.350

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233-239. doi:10.1111%2Fj.1467-9280.2007.01882.x

Hartzler, B., & Fromme, K. (2003). Heavy episodic drinking and college entrance. *Journal of Drug Education, 33*(3)*,* 259–274. doi.10.2190/2L2X-F8E1-32T9-UDMU

Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. Retrieved from: http://www.afhayes.com/public/process2012.pdf

Health Research Authority (2014). HRA ethics guidance: Payment and incentives in Research. Retrieved from: http://www.hra.nhs.uk/documents/2014/05/hra-guidance-payments-incentives-research-v1-0-final

Johnson, A. M., Rodger S. C., Harris, J. A., Edmunds, L. A., & Wakabayashi, P. (2005). Predictors of alcohol consumption in university residences. *Journal of Drug Education, 49*, 9–18.

Kelly, J. F., Magill, M., Slaymaker, V., & Kahler, C. (2010). Psychometric validation of the Leeds dependence questionnaire (LDQ) in a young adult clinical sample. *Addictive Behaviours, 35*(4), 331-336. doi:10.1016/j.addbeh.2009.11.005.

Kirkpatrick, L. A., & Hazan, C. (1994). Attachment styles and close relationships: A four-year prospective study. *Personal Relationships 1*(2), 123-142. doi:10.1111/j.1475-6811.1994.tb00058.x

Kuntsche, E., & Kuntsche, S. (2009). Development and validation of the Drinking Motive Questionnaire Revised Short Form (DMQ-R SF). *Journal of Clinical Child and Adolescent Psychology, 38*(6), 899-908. doi:10.1080/15374410903258967

Kushner, M. G., Sher, K. J., Wood, M. D., Wood, P. K. (1994). Anxiety and drinking behavior: Moderating effects of tension-reduction alcohol outcome expectancies. *Alcoholism, Clinical and Experimental Research, 18*(4), 852–860. doi:10.1111/j.1530-0277.1994.tb00050.x

Lennings, C. J. (1999). An evaluation of the Leeds Dependence Questionnaire. *Journal of Child and Adolescent Substance Abuse, 8*(3), 73-87. doi:10.1300/J029v08n03_05

Loeys, T., Moerkerke, B., & Vansteelandt, S. (2014). A cautionary note on the power of the test for the indirect effect in mediational anaylsis. *Frontiers in Psychology, 5*(1549), 1-8. doi:10.3389/fpsyg.2014.01549

Lyne, J. P., O'Donoghue, B., Clancy, M., & O'Gara (2011). Comorbid psychiatric diagnoses among individuals presenting to an addiction treatment program for alcohol dependence. *Substance Use and Misuse, 46,* 351-358. doi:10.3109/10826081003754757

Mason, O., Platts, H. & Tyson, M. (2005). Early maladaptive schemas and adult attachment in a UK clinical population. *Psychology and Psychotherapy: Theory Research and Practice, 78,* 549-564. doi:10.1348/147608305X41371

Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological methods*, *12*(1), 23-44. doi.10.1037/1082-989X.12.1.23

de Meneses-Gaya, C., Zuardi, A. W., Loureiro, S. R., & Crippa, J. A. S. (2009). Alcohol use disorders identification test (AUDIT): An updated systematic review of psychometric properties. *Psychology & Neuroscience, 2*(1), 83-97. doi:10.3922/j.psns.2009.1.12

Mikulincer, M., Hirschberger, G., Nachmias, O., & Gillath, O. (2001). The affective component of the secure base schema: Affective priming with representations of attachment security. *Journal of Personality and Social Psychology, 81*(2), 305-321. doi:10.1037//0022-3514.81.2.305

Mikulincer, M., & Shaver, P. R. (2012). An attachment perspective on psychopathology. *World Psychiatry, 11*(1), 11-15. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3266769/

Miller, E. T., Neal, D. J., Roberts, L. J., Baer, J. S., Cressler, S. O., Metrik, J., & Marlatt, G. A. (2002). Test-retest reliability of alcohol measures: is there a difference between internet-based assessment and traditional methods? *Psychology of Addictive Behaviors, 16*(1), 56-63. doi.10.1037/0893-164X.16.1.56

Moore, A. A., Gould, R., Reuben, D. B., Greendale G. A., Carter, K., Zhou, K., Karlamangla, A. (2005). Longitudinal patterns and predictors of alcohol in the United States. *American Journal of Public Health,* 95(3), 458-464. doi:10.2105%2FAJPH.2003.019471

National Institute for Health & Clinical Excellence (2011). Alcohol-use disorders: Diagnosis, assessment and management of harmful drinking and alcohol dependence. National clinical practice guideline 115. Retrieved from https://www.nice.org.uk/guidance/cg115

Nutt, D. J., King, L. A., & Phillips, L. D. (2010). Drug harms in the UK: A multicriteria decision analysis. *Lancet, 376*(9752), 1558-1565. doi.10.1016/S0140-6736(10)61462-6

O'Connor, R. M., & Colder, C. R. (2005). Predicting alcohol patterns in first-year college students through motivational systems and reasons for drinking. *Psychology of Addictive Behaviors,* 19(1), 10–20. doi:10.1037/0893-164X.19.1.10

Office for National Statistics (2013). *Opinions and lifestyle survey, adult drinking habits in Great Britain, 2013.* London: ONS. Retrieved from http://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthan

dlifeexpectancies/compendium/opinionsandlifestylesurvey/2015-03-19/adultdrinkinghabitsingreatbritain2013

Office for National Statistics (2016). Statistics on Alcohol, England, 2016. Retrieved from http://digital.nhs.uk/catalogue/PUB20999

Platts, H., Tyson, M., & Mason, O. (2002). Adult attachment style and core beliefs: Are they linked? *Clinical Psychology and Psychotherapy, 9,* 332-348. doi:10.1002/cpp.345

Raistrick, D., Bradshaw, J., Tober, G., Weiner, J., Allison, J., & Healey, C. (1994). Development of the Leeds dependence questionnaire (LDQ): A questionnaire to measure alcohol and opiate dependence in the context of a treatment evaluation package. *Addiction, 89,* 563-572. doi:10.1111/j.1360-0443.1994.tb03332.x.

Ravitz, P., Maunder, R., Hunter, J., Sthankiya, B., & Lancee, W. (2010). Adult attachment measures: A 25-year review. *Journal of Psychometric Research, 69*(4), 419-432. doi:10.1016/j.jpsychores.2009.08.006.

Riso, L. P., Froman, S. E., Raouf, M., Gable, P., Maddux, R. E., Turini-Santorelli, N., … & Cherry, M. (2006). The long-term stability of early maladaptive schemas. *Cognitive Therapy and Research, 30*(4)*,* 515-529. doi:10.1007/s10608-006-9015-z

Roelofs, J., Onckels, L., & Muris, P. (2013). Attachment quality and psychopathological symptoms in clinically referred adolescents: The mediating role of early maladaptive schemas. *Journal of Child and Family Studies, 22*(3), 377-385. doi:10.1007/s10826-012-9589-x.

Roper, L., Dickson, J. M., Tinwell, C., Booth, P. G., & McGuire, J. (2010). Maladaptive cognitive schemas in alcohol dependence: Changes associated with a brief residential abstinence program. *Cognitive Therapy and Research, 34,* 207-215. doi:10.1007/s10608-009-9252

Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass, 5*(6), 359–371 doi:10.1111/j.1751-9004.2011.00355.x

Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R., & Grant, M. (1993). Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption: II. *Addiction, 86*(6)*,* 791-804. doi:10.1111/j.1360-0443.1993.tb02093.x

Scharfe, E., & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships, 1*(1), 23-43. doi:10.1111/j.1475-6811.1994.tb00053.x

Sheier, L. M., Botvin, G. J., & Baker, E. (1997). Risk and protective factors as predictors of adolescent alcohol involvement and transitions in alcohol use: a prospective analysis. *Journal of Studies on Alcohol, 58*(6), 652-667. doi:10.15288/jsa.1997.58.652

Shorey, R., C., Anderson, S., & Stuart, G. L. (2013). Early maladaptive schemas of substance abusers and their intimate partners. *Journal of Psychoactive Drugs, 45*(3), 266-275. doi:10.1080/02791072.2013.805982.

Shorey, R. C., Anderson, S., & Stuart, G. L. (2014). The relation between antisocial and borderline personality symptoms and early maladaptive schemas in a treatment seeking sample of male substance users. *Clinical Psychology and Psychotherapy, 21,* 341-351. doi:10.1002/cpp1843.

Shorey, R., C., Elmquist, J., Anderson, S., & Stuart, G. L. (2015a). The relationship between early maladaptive schemas, depression and generalized anxiety among adults seeking residential treatment for substance use disorders. *Journal of Psychoactive drugs, 47*(3), 230-238. doi:10.1080/02791072.2015.1050133.

Shorey, R., C., Elmquist, J., Anderson, S., & Stuart, G. L. (2015b). Early maladaptive

schemas in men seeking residential substance use treatment. *Personality and Individual Differences, 83,* 6-12. doi:10.1016/j.paid.2015.03.040.

Sibley, C. G., & Lui, J. H. (2004). Short-term temporal stability and factor structure of the revised experiences in close relationships (ECR-R) measure of adult attachment. *Personality and Individual Differences, 36,* 939-975. doi:10.1016/S0191-8869(03)00165-X

Taylor, C. D. J., Bee, P., & Haddock, G. (2017). Does schema therapy change schemas and symptoms? A systematic review across mental health disorders. *Psychology and Psychotherapy: Theory, Research and Practice, 90*(3), 456-479. doi:10.1111/papt.12112.

Thomas, B. A. & McCambridge, J. (2008). Comparative psychometric study of a range of hazardous drinking measures administered online in a youth population. *Drug and Alcohol Dependence, 96*, 121–127. doi:10.1016/j.drugalcdep.2008.02.010

Vungkhanching, M., Sher, K. J., Jackson, K. M., & Parra, G. R. (2004). Relation of attachment style to family history of alcoholism and alcohol use disorders in early adulthood. *Drug and Alcohol Dependence, 75*(1), 47-53. doi:10.1016/j.drugalcdep.2004.01.013

Welburn, K., Coristine, M., Dagg, P., Pontefract, A., & Jordan, S. (2002). The Schema Questionnaire-Short Form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research, 26*(4), 519-530. doi:0147-5916/02/0800-0519/0

White, H. R., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., & Abbott, R. D. (2006). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. *Journal of Studies on Alcohol, 67*(6), 810-822.

Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2314672/pdf/nihms42189.pdf

Wyrzykowska, E., Glogowska, K. & Mickiewicz, K. (2014). Attachment relationships among alcohol dependent persons. *Alcoholism and Drug Addiction, 27*(2), 145-161. doi:10.1016/S0867-4361(14)70010-0

Young, J. E. (1998). *The Young Schema Questionnaire: Short form.* Available in electronic form at: http://www.schematherapy.com/id54htm

Young, J. E. (2003). *Young Schema Questionnaire-Short Form 3 (YSQ-S3).* New York, NY: Schema Therapy Institute.

Young, J. E. (2014) Early maladaptive schemas. In J. Young (2016). *Schema therapy inventories and related materials, Version 2.5.* New York: Schema Therapy Institute.

Young, J. E., Klosko, J., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York, NY: Guilford Press.

Young, J. E., & Lindemann, M. D. (1992). An integrative schema-focused model for personality disorders. *Journal of Cognitive Psychotherapy: An International Quarterly, 6,* 11-24.

Appendix A

Author Instructions for Frontiers in Psychology®

For full guidance, see https://www.frontiersin.org/journals/psychology#author-guidelines

For Systematic Reviews, the following article structure applies:

Title: include systematic review/meta-synthesis/meta-analysis as appropriate in the title

Word count (maximum length) for manuscript is 12,000 words, excluding abstract, section titles, figure and table captions, funding statements, acknowledgments and references in the bibliography

Maximum word count for the abstract it is 350 words, running title 5 words.

Each of the sections should include sub-sections as follows:

Abstract
- Background
- Methods
- Results
- Conclusions

Introduction
- Rationale
- Objectives
- Research question

Methods
- Study design
- Participants, interventions, comparators
- Systematic review protocol
- Search strategy
- Data sources, studies sections and data extraction
- Data analysis

Results
- Provide a flow diagram of the studies retrieved for the review
- Study selection and characteristics
- Synthesized findings
- Risk of bias

Discussion
- Summary of main findings
- Limitations
- Conclusions

Appendix B

Author Instructions for Journal of Abnormal Psychology®

For full guidance, see http://www.apa.org/pubs/journals/abn/
This journal publishes articles on research and theory in the broad field of psychopathology and other abnormal behaviours, their determinants, and correlates, A major area of focus is the pathological or atypical features of the behaviour of normal persons.

Word limits
Maximum word count for the abstract it is 250 words.
Maximum key words or phrases is 5 words.

A regular article should not exceed 9,000 words when including the abstract, body of the text, tables, table captions, figure captions, footnotes, author notes and references in a word count.

Style Guidelines
Double-space all copy. The Journal of Abnormal Psychology conforms to the APA style guidelines; for more information, authors should consult the latest edition of the APA Style Manual.

Appendix C

Quality Assessment Tool for Studies with Diverse Designs and Scoring Guidance Notes

Criteria	0 = Not at all	1 = Very slightly	2 = Moderately	3 = Complete
Explicit theoretical framework	No mention at all.	Reference to broad theoretical framework.	Reference to a specific theoretical basis.	Explicit statement of theoretical framework and/or constructs applied to the research.
Statement of aims/objectives in main body of report	No mention at all.	General reference to aim/objective at some point in the report including abstract.	Reference to broad aims/objectives in main body of report.	Explicit statement of aims/objectives in main body of report.
Clear description of research setting	No mention at all.	General description of research area and background, e.g. 'in primary care'.	General description of research problem in the target population, e.g. 'among GPs in primary care'.	Specific description of the research problem and target population in the context of the study, e.g. 'nurses and doctors from GP practices in the East Midlands'
Description of procedure for data collection	No mention at all.	Very basic and brief outline of data collection procedure, e.g. 'using a questionnaire distributed to staff'.	States each stage of data collection procedure but with limited detail, or states some stages in detail but omits others.	Detailed description of each stage of the data collection procedure, including when, where and how data were gathered.
Rationale for choice of data collection tool(s)	No mention at all.	Very limited explanation for choice of data collection tool.	Basic explanation of rationale for choice of data collection tool, e.g. based on use in a prior similar study.	Detailed explanation of rationale for choice of data collection tool, e.g. relevance to the study aims and assessments of tool quality either statistically, e.g. for reliability and validity, or relevant qualitative assessment.

Detailed recruitment data	No mention at all.	Minimal recruitment data, e.g. no. of questionnaires sent and no. returned.	Some recruitment information but not complete account of the recruitment process, e.g. recruitment figures but no information on strategy used.	Complete data regarding no. approached, no. recruited, attrition data where relevant, method of recruitment.
Strengths and limitations critically discussed	No mention at all.	Very limited mention of strengths and limitations with omissions of many key issues.	Discussion of some of the key strengths and weaknesses of the study but not complete.	Discussion of strengths and limitations of all aspects of study including design, measures, procedure, sample & analysis.
Representative sample of target group of a reasonable size	No statement of target group	Sample is limited but represents some of the target group or representative but very small.	Sample is somewhat diverse but not entirely representative, e.g. inclusive of all age groups, experience but only one workplace. Requires discussion of target population to determine what sample is required to be representative.	Sample includes individuals to represent a cross section of the target population, considering factors such as experience, age and workplace.
Statistical assessment of reliability and validity of measurement tool(s) (Quantitative only)	No mention at all.	Reliability and validity of measurement tool(s) discussed, but not statistically assessed.	Some attempt to assess reliability and validity of measurement tool(s) but insufficient, e.g. attempt to establish test-retest reliability is unsuccessful, but no action is taken.	Suitable and thorough statistical assessment of reliability and validity of measurement tools(s) with reference to the quality of evidence as a result of the measures used.
Fit between research question and method of analysis (Quantitative)	No mention at all.	Method of analysis can only address the research question basically or broadly.	Method of analysis can address the research question but there is a more suitable alternative that could have been used or used in addition to offer greater detail.	Method of analysis selected is the most suitable approach to attempt to answer the research question in detail.
Evidence of sample size considered in	No mention at all.	Basic explanation for choice of sample size.	Evidence that size of the sample has been considered in the study design.	Evidence of consideration of sample size in terms of saturation/information redundancy or to fit generic analytical

terms of analysis				requirements.
Evidence of user involvement in design	No mention at all.	Use of pilot study but no involvement in planning stages of early study design.	Pilot study with feedback from users informing changes to the design.	Explicit consultation with steering group or statement or formal consultation with users in planning of study design.
Fit between stated research question and format and content of data collection tool e.g. interview schedule (Qualitative)	No research question stated	Structure and/or content only suitable to address the research question in some aspects or superficially.	Structure and content allows for data to be gathered broadly addressing the stated research question(s) but could benefit from greater detail.	Structure and content allows for detailed data to be gathered around all relevant issues required to address the stated research question.
Fit between research question and method of collection (Quantitative)	No mention at all	Method of data collection can only address some aspects of the research question.	Method of data collection can address the research question but there is a more suitable alternative that could have been used in addition.	Method of data collection selected is the most suitable approach to attempt to answer the research question.
Good justification for analytical method selected	No mention at all.	Basic explanation for choice of analytic method.	Fairly detailed explanation of choice of analytic method.	Detailed explanation for choice of analytic method based on nature of research question(s).
Assessment of reliability of analytic process (Qualitative only)	No mention at all.	More than one researcher involved in the analytic process but no further reliability assessment.	Limited attempt to assess reliability e.g. reliance on one method.	Use of a range of methods to assess reliability, e.g. triangulation, multiple researchers, varying research backgrounds.

Appendix D

Demographic Questionnaire

Demographic Questionnaire

1. Please indicate your gender

Male ☐
Female ☐
I do not wish to disclose ☐

2. Please state your age in years

.....years old

3. Please indicate the option that best describes your relationship status

Not in a relationship ☐
In a committed relationship ☐
In a less committed relationship ☐
Married / civil partnership ☐
Legally separated ☐
Divorced ☐
Widowed ☐

4. Please indicate the length of your current relationship

Not applicable ☐
Less than 6 months ☐
6-12 months ☐
1.1-3.0 years ☐
3.1-5.0 years ☐
Over 5 years ☐
Over 10 years ☐

5. Please indicate the option that best describes your living situation

Live with partner/spouse ☐
Live with flatmates/housemates ☐
Live with friends ☐
Live with parents ☐
Live alone ☐
Other (please state) ☐

.....

6. Please indicate the level of your current studies

Undergraduate ☐
Postgraduate ☐

7. Which year of your current programme are you in?

First year ☐
Second year ☐
Third year ☐
Other (please state) ☐

.....

8. How many complete years <u>in total</u> have you been a student at the University of Liverpool?

Less than a year ☐
1 year ☐
2 years ☐
3 years ☐
4 years ☐
5 years ☐
More than 5 years (please state) ☐

.....

9. Which option best describes your employment status?

Employed full-time (paid) ☐
Employed part-time (paid) ☐
Full-time voluntary work ☐
Part-time voluntary work ☐
I do not currently work ☐
Other (please state) ☐

10. Please provide us with the first part of your postcode (e.g. L69)*

.....

** Please note this will be used as a measure of socio-economic status and will not be used to identify you in any way*

11. How long have you lived at your current address?

- Less than 6 months ☐
- 6-12 months ☐
- 1.1-2.0 years ☐
- 2.1-3.0 years ☐
- 3.1-4.0 years ☐
- 4.1-5.0 years ☐
- More than 5 years (please state) ☐

.....

12. How long have you lived in Merseyside?

- I do not live in Merseyside ☐
- 0-12 months ☐
- 1.1-2.0 years ☐
- 2.1-3.0 years ☐
- 3.1-4.0 years ☐
- 4.1-5.0 years ☐
- More than 5 years (please state) ☐

.....

13. Please indicate your religion or belief

- Atheism ☐
- Buddhism ☐
- Christianity ☐
- Hinduism ☐
- Islam ☐
- Jainism ☐
- Judaism ☐
- Sikhism ☐
- I do not wish to disclose ☐
- Other (please state) ☐

.....

14. How did you hear of this study?

- Poster advertisement ☐
- Intranet advertisement ☐
- Word of mouth ☐
- Other (please state) ☐

.....

15. How many units of alcohol have you drank in the past week? **

.....units

***Please use the alcohol unit calculator provided by the researcher.*

If you are still in doubt, you can ask the researcher for assistance or, using the space below please give details of the type and quantity of alcohol, so that the researcher can estimate the total units of alcohol

.....

.....

.....

.....

16. Please indicate which option best describes your ethnic origin

WHITE –British	☐
WHITE – Irish	☐
WHITE – Any other white background	☐
ASIAN or ASIAN BRITISH - Indian	☐
ASIAN or ASIAN BRITISH – Pakistani	☐
ASIAN or ASIAN BRITISH – Bangladeshi	☐
ASIAN or ASIAN BRITISH – Any other Asian background	☐
MIXED – White & Black Caribbean	☐
MIXED – White & Black African	☐
MIXED – White and Asian	☐
MIXED – Any other mixed background	☐
BLACK or BLACK BRITISH – Caribbean	☐
BLACK or BLACK BRITISH – African	☐
BLACK or BLACK BRITISH – Any other Black background	☐
OTHER ETHNIC GROUP – Chinese	☐
OTHER ETHNIC GROUP – Any other ethnic group	☐
I do not wish to disclose my ethnicity	☐

Appendix E

Alcohol Use Disorders Identification Test (AUDIT)

Box 10

The Alcohol Use Disorders Identification Test: Self-Report Version

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.
Place an X in one box that best describes your answer to each question.

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

Appendix F

Leeds Dependence Questionnaire (LDQ)

Leeds Dependence Questionnaire - LDQ

Here are some questions about the importance of alcohol or other drugs in your life. Think about the main substance you have been using over the **last 4 weeks** and tick the closest answer to how you see yourself

	Never 0	Sometimes 1	Often 2	Nearly Always 3
Do you find yourself thinking about when you will next be able to have another drink or take more drugs?	☐	☐	☐	☐
Is drinking or taking drugs more important than anything else you might do during the day?	☐	☐	☐	☐
Do you feel that your need for drink or drugs is too strong to control?	☐	☐	☐	☐
Do you plan your days around getting and taking drink or drugs?	☐	☐	☐	☐
Do you drink or take drugs in a particular way in order to increase the effect it gives you?	☐	☐	☐	☐
Do you drink or take drugs morning, afternoon and evening?	☐	☐	☐	☐
Do you feel you have to carry on drinking or taking drugs once you have started?	☐	☐	☐	☐
Is getting an effect more important than the particular drink or drug you use?	☐	☐	☐	☐
Do you want to take more drink or drugs when the effects start to wear off?	☐	☐	☐	☐
Do you find it difficult to cope with life without drink or drugs?	☐	☐	☐	☐

Appendix G

Drinking Motives Questionnaire

Drinking Motives Questionnaire – Revised Short Form

Kuntsche & Kuntsche (2009)

In the last 12 months, how often did you drink...	Never	Sometimes	Almost always
because you like the feeling?	☐	☐	☐
to get high?	☐	☐	☐
because it's fun?	☐	☐	☐
because it helps you enjoy a party?	☐	☐	☐
because it makes social gatherings more fun?	☐	☐	☐
because it improves parties and celebrations?	☐	☐	☐
to fit in with a group you like?	☐	☐	☐
to be liked?	☐	☐	☐
so you won't feel left out?	☐	☐	☐
because it helps you when you feel depressed or nervous?	☐	☐	☐
to cheer up when you're in a bad mood?	☐	☐	☐
to forget about your problems?	☐	☐	☐

Appendix H

Experiences in Close Relationships Questionnaire – Revised

The Experiences in Close Relationships-Revised (ECR-R) Questionnaire
Fraley, Waller and Brennan (2000)

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you *generally* experience relationships, not just what is happening in a current relationship. Using the 1 to 7 scale, after each statement, circle a number to indicate how much you agree or disagree with each statement. 1=strongly disagree, 7=strongly agree.

	QUESTION	1=Strongly Disagree....7=Strongly Agree						
1	I prefer not to be too close to romantic partners.	1	2	3	4	5	6	7
2	I'm afraid that I will lose my partner's love.	1	2	3	4	5	6	7
3	My desire to be very close sometimes scares people away.	1	2	3	4	5	6	7
4	I tell my partner just about everything.	1	2	3	4	5	6	7
5	I am nervous when partners get too close to me.	1	2	3	4	5	6	7
6	It's not difficult for me to get close to my partner.	1	2	3	4	5	6	7
7	I often wish that my partner's feelings for me were as strong as my feelings for him or her.	1	2	3	4	5	6	7
8	I prefer not to show a partner how I feel deep down.	1	2	3	4	5	6	7
9	I don't feel comfortable opening up to romantic partners.	1	2	3	4	5	6	7
10	I find it relatively easy to get close to my partner.	1	2	3	4	5	6	7
11	I feel comfortable sharing my private thoughts and feelings with my partner.	1	2	3	4	5	6	7
12	When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.	1	2	3	4	5	6	7
13	I usually discuss my problems and concerns with my partner.	1	2	3	4	5	6	7
14	Sometimes romantic partners change their feelings about me for no apparent reason.	1	2	3	4	5	6	7
15	I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.	1	2	3	4	5	6	7
16	I find it difficult to allow myself to depend on romantic partners.	1	2	3	4	5	6	7
17	It helps to turn to my romantic partner in times of need.	1	2	3	4	5	6	7
18	My partner only seems to notice me when I'm angry.	1	2	3	4	5	6	7
19	I worry that I won't measure up to other people.	1	2	3	4	5	6	7
20	I get uncomfortable when a romantic partner wants to be very close.	1	2	3	4	5	6	7
21	I feel comfortable depending on romantic partners.	1	2	3	4	5	6	7
22	I am very comfortable being close to romantic partners.	1	2	3	4	5	6	7
23	I worry a lot about my relationships.	1	2	3	4	5	6	7
24	I often worry that my partner will not want to stay with me.	1	2	3	4	5	6	7
25	It's easy for me to be affectionate with my partner.	1	2	3	4	5	6	7
26	It makes me mad that I don't get the affection and support I need from my partner.	1	2	3	4	5	6	7
27	I talk things over with my partner.	1	2	3	4	5	6	7

28	I find it easy to depend on romantic partners.	1	2	3	4	5	6	7
29	I rarely worry about my partner leaving me.	1	2	3	4	5	6	7
30	I do not often worry about being abandoned.	1	2	3	4	5	6	7
31	I find that my partner(s) don't want to get as close as I would like.	1	2	3	4	5	6	7
32	I often worry that my partner doesn't really love me.	1	2	3	4	5	6	7
33	My partner really understands me and my needs.	1	2	3	4	5	6	7
34	My romantic partner makes me doubt myself.	1	2	3	4	5	6	7
35	When my partner is out of sight, I worry that he or she might become interested in someone else.	1	2	3	4	5	6	7
36	I worry that romantic partners won't care about me as much as I care about them.	1	2	3	4	5	6	7

Note: Items in the ECR-R were randomised, as per authors' recommendations

Appendix I

Young Schema Questionnaire – Short Form – 3rd Version

YSQ – S3

Jeffrey Young, Ph.D.

Name		Date	

Instructions

Listed below are statements that people might use to describe themselves. Please read each statement, then rate it based on how accurately it fits you ***over the past year***. When you are not sure, base your answer on what you ***emotionally feel***, not on what you think to be true.

A few of the items ask about your relationships with your parents or romantic partners. If any of these people have died, please answer these items based on your relationships when they were alive. If you do not currently have a partner but have had partners in the past, please answer the item based on your most recent significant romantic partner.

Choose the *highest rating from 1 to 6* that best describes you, and write the number in the white box to the left of each statement.

Rating Scale

1 Completely untrue of me	3 Slightly more true than untrue	5 Mostly true of me
2 Mostly untrue of me	4 Moderately true of me	6 Describes me perfectly

1		I haven't had someone to nurture me, share him/herself with me, or care deeply about everything that happens to me.
2		I find myself clinging to people I'm close to because I'm afraid they'll leave me.
3		I feel that people will take advantage of me.
4		I don't fit in.
5		No man/woman I desire could love me once he or she saw my defects or flaws.
6		Almost nothing I do at work (or school) is as good as other people can do.
7		I do not feel capable of getting by on my own in everyday life.
8		I can't seem to escape the feeling that something bad is about to happen.
9		I have not been able to separate myself from my parent(s) the way other people my age seem to.
10		I think that if I do what I want, I'm only asking for trouble.

Note: Participants were asked to refrain from writing their name and date on the form, to ensure anonymity.

11		I'm the one who usually ends up taking care of the people I'm close to.
12		I am too self-conscious to show positive feelings to others (e.g., affection, showing I care).
13		I must be the best at most of what I do; I can't accept second best.
14		I have a lot of trouble accepting "no" for an answer when I want something from other people.
15		I can't seem to discipline myself to complete most routine or boring tasks.
16		Having money and knowing important people make me feel worthwhile.
17		Even when things seem to be going well, I feel that it is only temporary.
18		If I make a mistake, I deserve to be punished.
19		I don't have people to give me warmth, holding, and affection.
20		I need other people so much that I worry about losing them.
21		I feel that I cannot let my guard down in the presence of other people, or else they will intentionally hurt me.
22		I'm fundamentally different from other people.
23		No one I desire would want to stay close to me if he or she knew the real me.
24		I'm incompetent when it comes to achievement.
25		I think of myself as a dependent person when it comes to everyday functioning.
26		I feel that a disaster (natural, criminal, financial, or medical) could strike at any moment.
27		My parent(s) and I tend to be over-involved in each other's lives and problems.
28		I feel as if I have no choice but to give in to other people's wishes, or else they will retaliate, get angry, or reject me in some way.
29		I am a good person because I think of others more than myself.
30		I find it embarrassing to express my feelings to others.
31		I try to do my best; I can't settle for "good enough."
32		I'm special and shouldn't have to accept many of the restrictions or limitations placed on other people.
33		If I can't reach a goal, I become easily frustrated and give up.

1 Completely untrue of me	3 Slightly more true than untrue	5 Mostly true of me
2 Mostly untrue of me	4 Moderately true of me	6 Describes me perfectly

YSQ – S3 |3

34		Accomplishments are most valuable to me if other people notice them.
35		If something good happens, I worry that something bad is likely to follow.
36		If I don't try my hardest, I should expect to lose out.
37		I haven't felt that I am special to someone.
38		I worry that people I feel close to will leave me or abandon me.
39		It is only a matter of time before someone betrays me.
40		I don't belong; I'm a loner.
41		I'm unworthy of the love, attention, and respect of others.
42		Most other people are more capable than I am in areas of work and achievement.
43		I lack common sense.
44		I worry about being physically attacked by people.
45		It is very difficult for my parent(s) and me to keep intimate details from each other without feeling betrayed or guilty.
46		In relationships, I usually let the other person have the upper hand.
47		I'm so busy doing things for the people that I care about that I have little time for myself.
48		I find it hard to be free-spirited and spontaneous around other people.
49		I must meet all my responsibilities.
50		I hate to be constrained or kept from doing what I want.
51		I have a very difficult time sacrificing immediate gratification or pleasure to achieve a long-range goal.
52		Unless I get a lot of attention from others, I feel less important.
53		You can't be too careful; something will almost always go wrong.
54		If I don't do the job right, I should suffer the consequences.
55		I have not had someone who really listens to me, understands me, or is tuned into my true needs and feelings.
56		When someone I care for seems to be pulling away or withdrawing from me, I feel desperate.

57		I am quite suspicious of other people's motives.
58		I feel alienated or cut off from other people.
59		I feel that I'm not lovable.
60		I'm not as talented as most people are at their work.
61		My judgment cannot be counted on in everyday situations.
62		I worry that I'll lose all my money and become destitute or very poor.
63		I often feel as if my parent(s) are living through me – that I don't have a life of my own.
64		I've always let others make choices for me, so I really don't know what I want for myself.
65		I've always been the one who listens to everyone else's problems.
66		I control myself so much that many people think I am unemotional or unfeeling.
67		I feel that there is constant pressure for me to achieve and get things done.
68		I feel that I shouldn't have to follow the normal rules or conventions that other people do.
69		I can't force myself to do things I don't enjoy, even when I know it's for my own good.
70		If I make remarks at a meeting, or am introduced in a social situation, it's important for me to get recognition and admiration.
71		No matter how hard I work, I worry that I could be wiped out financially and lose almost everything.
72		It doesn't matter why I make a mistake. When I do something wrong, I should pay the consequences.
73		I haven't had a strong or wise person to give me sound advice or direction when I'm not sure what to do.
74		Sometimes I am so worried about people leaving me that I drive them away.
75		I'm usually on the lookout for people's ulterior or hidden motives.
76		I always feel on the outside of groups.
77		I am too unacceptable in very basic ways to reveal myself to other people or to let them get to know me well.
78		I'm not as intelligent as most people when it comes to work (or school).

1 Completely untrue of me	3 Slightly more true than untrue	5 Mostly true of me
2 Mostly untrue of me	4 Moderately true of me	6 Describes me perfectly

YSQ – S3 |5

79		I don't feel confident about my ability to solve everyday problems that come up.
80		I worry that I'm developing a serious illness, even though nothing serious has been diagnosed by a doctor.
81		I often feel I do not have a separate identity from my parent(s) or partner.
82		I have a lot of trouble demanding that my rights be respected and that my feelings be taken into account.
83		Other people see me as doing too much for others and not enough for myself.
84		People see me as uptight emotionally.
85		I can't let myself off the hook easily or make excuses for my mistakes.
86		I feel that what I have to offer is of greater value than the contributions of others.
87		I have rarely been able to stick to my resolutions.
88		Lots of praise and compliments make me feel like a worthwhile person.
89		I worry that a wrong decision could lead to disaster.
90		I'm a bad person who deserves to be punished.

Appendix J

Letter Confirming Ethical Approval, University of Liverpool

Health and Life Sciences Committee on Research Ethics (Psychology, Health and Society)

10 February 2017

Dear Dr Christiansen,

I am pleased to inform you that your application for research ethics approval has been approved. Details and conditions of the approval can be found below:

Reference:	1498
Project Title:	Attachment, beliefs and alcohol
Principal Investigator/Supervisor:	Dr Paul Christiansen
Co-Investigator(s):	Mrs Elizabeth Rawlinson
Lead Student Investigator:	-
Department:	Psychological Sciences
Reviewers:	Dr Franklin Chang
Approval Date:	10/02/2017
Approval Expiry Date:	Five years from the approval date listed above

The application was **APPROVED** subject to the following conditions:

Conditions

- All serious adverse events must be reported via the Research Integrity and Ethics Team (ethics@liverpool.ac.uk) within 24 hours of their occurrence.
- If you wish to extend the duration of the study beyond the research ethics approval expiry date listed above, a new application should be submitted.
- If you wish to make an amendment to the research, please create and submit an amendment form using the research ethics system.
- If the named Principal Investigator or Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore it will be necessary to create and submit an amendment form using the research ethics system.
- It is the responsibility of the Principal Investigator/Supervisor to inform all the investigators of the terms of the approval.

Kind regards,

Health and Life Sciences Committee on Research Ethics (Psychology, Health and Society)

iphsrec@liverpool.ac.uk

0151 795 5420

Appendix K

Study Recruitment Advertisement

UNIVERSITY OF LIVERPOOL

Participants needed for alcohol study

We are looking for participants now who are:

- Students at the University of Liverpool
- Aged 18 and above

If you drink alcohol, are a student, are 18 years of age or older, you have not had and are not having treatment for alcohol or drug abuse, and you do not consider yourself to require treatment for these, then you are eligible to participate.

- This questionnaire study will take 20-30 minutes
- A £5 voucher will be given to all participants in recognition for their time

If you are interested, please contact the researcher, Liz Rawlinson:
elizabeth.rawlinson@liverpool.ac.uk

Liz Rawlinson Elizabeth.rawlinson@liverpool.ac.uk Alcohol study

Appendix L

Participant Information Sheet

Participant Information Sheet

Attachment, Beliefs and Alcohol Use

1. **Version 1: 23 January 2017**

   You are being invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask me if you would like more information or if there is anything that you do not understand. We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

   Thank you for reading this.

2. **What is the purpose of the study?**

   We are interested in exploring the underlying reasons why some people drink alcohol; we aim to investigate how people's attachment experiences and beliefs might be associated with alcohol use, whilst also exploring people's drinking motives. The results may ultimately help inform personalised interventions for alcohol consumption.

3. **Why have I been chosen to take part?**

   You have been chosen to take part in this study because you are a student at the University of Liverpool. We aim to recruit 120-150 students at the University of Liverpool to participate in the study. You are eligible to take part in the study if you are a student at the University of Liverpool and if you are at least 18 years old.

   You are not eligible to take part if you consider yourself to be abusing alcohol or drugs, if you have had or are currently undergoing treatment for alcohol or drug abuse or if you are abstaining from alcohol / teetotal.

4. **Do I have to take part?**

   Participation in this study is voluntary. You are free to withdraw without explanation and without incurring a disadvantage.

5. **What will happen if I take part?**

   This study will involve completing questionnaires, which will be given to you by the researcher. The questionnaires will involve gathering demographic data and then you will complete a series of questions about your alcohol use and reasons why you consume alcohol. You will also be asked to complete questionnaires about your relationships with others and early experiences. Completing the questionnaires should take approximately 20-30 minutes.

6. **Expenses and / or payments**

   As recognition of your time and effort in taking part in this study you will receive a £5 Love2Shop voucher. If you are a first year undergraduate psychology student, you will also receive 3 points as part of the experimental participation requirement (EPR) scheme.

7. **Are there any benefits in taking part?**

   Although there are no immediate personal benefits in taking part in this study it is anticipated the data gathered will help us to understand a potential association between attachment, beliefs and alcohol use.

8. Are there any risks in taking part?

As part of the research you will be asked to reflect upon your beliefs about early experiences and relationships. You will be asked to select statements that best represent these beliefs, without having to disclose any personal information about them. Thinking about early experiences and relationships can potentially be uncomfortable or upsetting. Some questions may trigger concerns about your alcohol consumption. If you become concerned or distressed you can contact:

- Your GP or healthcare professional
- The University of Liverpool Counselling Service; 14 Oxford Street, Liverpool, L69 7WX.
  Tel: 0151 794 3304, email counserv@liverpool.ac.uk
  Web page: https://www.liverpool.ac.uk/studentsupport/counselling/
- DrinkAware (independent charity). Tel: 020 7766 9900
  web page: https://www.drinkaware.co.uk/

9. What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, please feel free to let us know by discussing this with Liz Rawlinson (Student Researcher). Alternately, you can contact Liz at elizabeth.rawlinson@liverpool.ac.uk or Dr Paul Christiansen (Principal Investigator) on 0151 794 6959 or at prc@liverpool.ac.uk and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer at ethics@liv.ac.uk. When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

10. Will my participation be kept confidential?

All data collected during this project will be kept confidential. The questionnaires you complete will be anonymous and will be stored securely in the department of psychology and only members of the research team will have access to the data.

Data will be stored for 5 years after the completion of the project in line with University of Liverpool guidelines and will be disposed of confidentially after this time.

11. What will happen to the results of the study?

Data collected during this study will be used to produce a research dissertation, which will contribute towards the research requirement of the doctorate in clinical psychology. It is also anticipated the research will be published in a peer reviewed psychology journal. All data collected will remain anonymous and you will not be identifiable from the published results of the study.

12. What will happen if I want to stop taking part?

You can withdraw from the study without explanation. However, once you submit your data, it will be anonymised and therefore you will no longer be able to withdraw your data.

13. Who can I contact if I have further questions?

If you have further questions, please contact

Liz Rawlinson (Student Researcher) or
Division of Clinical Psychology
Whelan Building
The Quadrangle
Brownlow Hill
Liverpool
L69 3GB
Telephone: 0151 794 5530
Email: elizabeth.rawlinson@liverpool.ac.uk

Paul Christiansen (Principal Investigator)
Department of Psychological Sciences
Eleanor Rathbone Building
University of Liverpool
Liverpool
L69 7ZA

Telephone: 0151 794 6959
Email: prc@liverpool.ac.uk

Appendix M

Consent Form

UNIVERSITY OF LIVERPOOL

Participant Consent Form

Title of Research: Attachment, Beliefs and Alcohol Use

Liz Rawlinson (Student Researcher)
Dr Paul Christiansen (Principal Investigator)

Please initial box

1. I confirm that I have read and have understood the information sheet (dated 23 January 2017) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I confirm that I am: ☐
   a. Aged 18 years old or over
   b. A student at the University of Liverpool
3. I understand that I must not take part if I am: ☐
   a. Under the age of 18 years old
   b. If I consider myself to be abusing drugs or alcohol
   c. If I have had or are currently undergoing treatment for drug or alcohol abuse.
   d. If I am teetotal / abstaining from alcohol
4. I understand that my participation is voluntary and that I am free to withdraw without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline. ☐
5. I understand and agree that once I submit my data it will become anonymised and I will therefore no longer be able to withdraw my data. ☐
6. I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the reports or publications that result from the research. ☐
7. I agree to take part in the above study. ☐

Participant Name	Date	Signature
LIZ RAWLINSON		
Name of Person taking consent	Date	Signature

Principal Investigator:
Dr Paul Christiansen
Department of Psychological Sciences
Eleanor Rathbone Building
University of Liverpool
Liverpool
L69 7WX
Work Telephone: 0151 7946959
Work email: prc@liverpool.ac.uk

Student Researcher:
Liz Rawlinson
Division of Clinical Psychology
Whelan Building
Brownlow Hill
Liverpool
L69 3GB
Work Telephone: 0151 794 5530
Work Email: Elizabeth.rawlinson@liverpool.ac.uk

Version 1: 23 January 2017

Appendix N

Participant Debrief Sheet

UNIVERSITY OF LIVERPOOL

Participant Debrief Sheet

Thank you for participating in this study regarding attachment, beliefs and alcohol use. Your contribution to this research is greatly appreciated, as the data collected during this study will be used to produce a research dissertation, contributing towards the research requirement of the doctorate in clinical psychology.

This study sought to examine the role of early maladaptive schemas (EMS), which can be described as patterns or themes of beliefs and internal representations of the 'self' and the 'self' in relation to others, which are thought to have arisen from early experiences. We were interested in exploring the association between EMS, attachment and alcohol use. Based on previous research, we hypothesised that there would be a strong association between EMS and alcohol use, adult attachment and alcohol use, and EMS and adult attachment style. We planned to explore the role of adult attachment with the presence of EMS in influencing alcohol consumption, whilst also exploring the role of drinking motives. Our aims were to provide an understanding of the underlying reasons why some people drink alcohol, which could help inform personalised interventions for alcohol consumption.

If you would like to learn more about this research or if you are interested in the results of the study, you may contact:

Liz Rawlinson (Student Researcher) elizabeth.rawlinson@liverpool.ac.uk
Paul Christiansen (Principal Investigator) prc@liverpool.ac.uk 0151 794 6959.

Please contact us if you have any further questions or concerns regarding this research as well. Thank you once again for your participation.

Version 1: 23 January 2017

Appendix O

Participant Characteristics

Participant Characteristics – Relationship Information

	Male	Female	Total
Characteristic	*n* (%)	*n* (%)	*n* (%)
Relationship Status			
Not in a relationship	12 (9.4)	29 (22.7)	41 (32.0)
In a committed relationship	17 (13.3)	50 (39.1)	67 (52.3)
In a less committed relationship	1 (0.78)	1 (0.78)	2 (1.6)
Married/ civil partnership	5 (3.9)	12 (9.4)	17 (13.3)
Divorced	0 (0)	1 (0.78)	1 (0.78)
Relationship Duration			
Not applicable	12 (9.7)	29 (22.7)	41 (32)
Less than 6 months	2 (1.6)	3 (2.3)	5 (3.9)
6-12 months	1 (0.78)	6 (4.7)	7 (5.5)
1.1-3 years	8 (6.3)	11 (8.6)	19 (14.8)
3.1-5 years	2 (1.6)	15 (11.7)	17 (13.3)
Over 5 years	5 (3.9)	19 (14.8)	24 (18.8)
Over 10 years	5 (3.9)	10 (7.8)	15 (11.7)
Living Situation			
Live with partner/spouse	13 (10.2)	38 (27.7)	51 (39.8)
Live with flatmates/housemates	11 (8.6)	27 (21.1)	38 (29.7)
Live with friends	2 (1.6)	8 (6.25)	10 (7.8)
Live with parents	3 (2.3)	4 (3.1)	7 (5.5)
Live alone	6 (4.7)	13 (10.2)	19 (14.8)
Other	0 (0.0)	3 (2.3)	3 (2.3)
Current Studies			
Undergraduate	6 (4.7)	19 (14.8)	25 (19.5)
Postgraduate	29 (22.7)	74 (57.8)	103 (80.5)
Current Year of Studies			
First year	15 (11.7)	37 (28.9)	52 (40.6)
Second year	10 (7.8)	26 (20.3)	36 (28.1)
Third year	8 (6.3)	25 (19.5)	33 (25.8)
Other	2 (1.6)	5 (3.9)	7 (5.5)
Total Time at University of Liverpool			
Less than a year	11 (8.6)	30 (23.4)	41 (32.0)
1 year	7 (5.5)	15 (11.7)	22 (17.2)
2 years	6 (4.7)	17 (13.3)	23 (18.0)
3 years	3 (2.3)	13 (10.2)	16 (12.5)
4 years	4 (3.1)	6 (4.7)	10 (7.8)
5 years	1 (0.78)	5 (3.9)	6 (4.7)
More than 5 years	3 (2.3)	7 (5.5)	10 (7.8)

Participant Characteristics – Religion and Ethnicity

Characteristic		Male *n* (%)	Female *n* (%)	Total *n* (%)
Religion				
	Atheism	19 (14.8)	55(43.0)	74 (57.8)
	Buddhism	3 (2.3)	0 (0.0)	3 (2.3)
	Christianity	7 (5.5)	21 (16.4)	28 (21.9)
	Hinduism	1 (0.8)	0 (0.0)	1 (0.8)
	Islam	2 (1.6)	2 (1.6)	4 (3.1)
	Judaism	0 (0.0)	1 (0.8)	1 (0.8)
	Other	4 (3.1)	12 (8.7)	16 (12.5)
Ethnic Origin				
	White British	21 (16.4)	65 (50.8)	86 (67.2)
	White Irish	0 (0.0)	6 (4.7)	6 (4.7)
	White – Other background	6 (4.7)	10 (7.8)	16 (12.5)
	Asian or Asian British – Indian	0 (0.0)	1 (0.8)	1 (0.8)
	Asian or Asian British – Pakistani	1 (0.8)	2 (1.6)	3 (2.3)
	Asian or Asian British – Other background	3 (2.3)	0 (0.0)	3 (2.3)
	Mixed – White and Asian	1 (0.8)	2 (1.6)	3 (2.3)
	Mixed – Any Other Mixed background	0 (0.0)	3 (2.3)	3 (2.3)
	Black or Black British – African	1 (0.8)	1 (0.8)	2 (1.6)
	Chinese	2 (1.6)	1 (0.8)	5 (3.9)